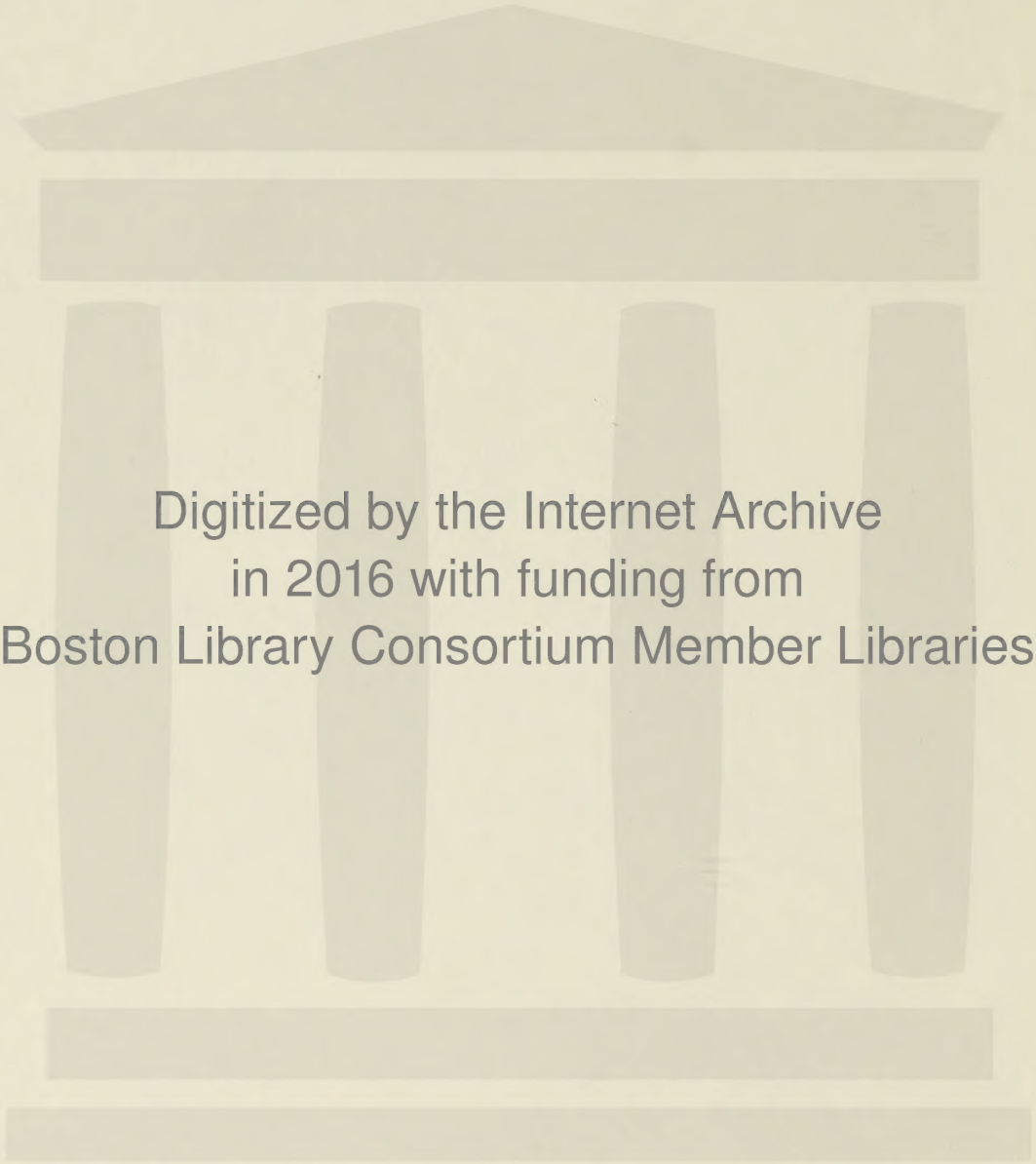
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BOSTON UNIVERSITY

SCHOOL OF EDUCATION

Service Paper

A STUDY OF SOME OF THE VALUES OF SCIENCE IN THE PRIMARY SCHOOL

Submitted by

Elizabeth Pierce True

(A.B., Emerson College, 1940)

In partial fulfillment of requirements for
the degree of Master of Education

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First Reader: Helen B. Sullivan, Associate Professor of Education

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To Mrs. Flora Haviland McGrath, Director of Courses of Study and Supervisor of the Weymouth Elementary Schools, the writer wishes to express her sincere appreciation for her cooperation and encouragement in the construction of the Science Workbook.

To Miss Marion E. Ray, Supervisor of Art, who by her cooperation and enthusiasm made possible the development of an Art program correlated with the Science Workbook.For the dozen pictures drawn by Miss Ray for the classroom as a part of the section entitled "Animals in Winter" the writer wishes to express her gratitude.

To Miss Olive Hackett and her assistants for their excellent work in mimeographing the Workbooks.

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TABLE OF CONTENTS

	PAGE
INTRODUCTION	1
CHAPTER	
I. THE PROBLEM AND DEFINITIONS OF TERMS USED. .	3
II. REVIEW OF THE LITERATURE	10
III. THE MATERIALS USED AND THE GROUP STUDIED . .	42
IV. SUMMARY AND CONCLUSIONS.	62
V. SUGGESTIONS FOR FURTHER RESEARCH	68
BIBLIOGRAPHY	69
APPENDIX	

TABLE OF CONTENTS

PAGE

INTRODUCTION 1

CHAPTER

I. THE PROBLEM AND DEFINITIONS OF TERMS USED. . . 3

II. REVIEW OF THE LITERATURE 10

III. THE MATERIALS USED AND THE GROUP STUDIED . . 42

IV. SUMMARY AND CONCLUSIONS. 82

V. SUGGESTIONS FOR FURTHER RESEARCH 88

BIBLIOGRAPHY 89

APPENDIX

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It was the purpose of this study to attempt to describe some of the values that can be obtained from the teaching of science to a Primary Group. The study attempts to infer through historical research and a general survey of the problems and needs of present-day society some of the possible benefits to be obtained through scientific education. This instruction is to be developed as a continuous program from the Primary School through higher education. Also, that such instruction be based not on the traditional subject-mastery point of view but based on those scientific principles which may be demonstrated as having a contribution in developing a child's growth in useful directions. In this way, content becomes a means and not an end, and science instruction emerges not as small content items but as an area of thought to be measured in terms of large outcomes.

The study attempts to present a brief survey of the historical development of science for the child. It attempts to show the relationship which science instruction has to the society of the past. Emphasis was placed on description of some of the values of science to present-day society together with its probable value to society of the future.

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Although the elementary-science movement seems to be experiencing something of a vogue in the field of education today; yet observation seems to indicate that much of the instruction is to be found only in certain localities. Many localities have no formal basis of instruction and have not developed any curriculum for instruction. In such places, science instruction takes place only if an individual teacher has a specific interest in developing science programs.

In the Primary School, for the most part, the only scientific instruction that the child will receive is that which may occur in his general reading class. In the intermediate grades and in the junior high school, too often the science materials are inadequate, while the time allotment on the program is too brief.

A further purpose of this study was to show that science is not an isolated subject, but that it can be allied and developed through reading programs. It can be allied with number work. It can be developed through the field of Art. The attempt to show such development was used with a Primary Group (Age 7--8), but the inference might be drawn that such correlation between subjects could take place throughout the elementary school.

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Definition of the problem.-- This study is an attempt to justify the inclusion within the school curriculum of a Science program to begin at the lower primary level. It is to be hoped that through the inclusion of such instruction, conceptions which are basic to future scientific attitudes may be developed from earliest educational life.

From such instruction, the larger values that the field of Science may have to offer can be utilized in the advancement and the enrichment of the young child. It is recognized that the present age presents constant interaction between the individual and an environment focussed in a Scientific Age.

A search for the value of a scientific education for the layman offers several factors:

1. The most obvious and perhaps the most limited view of values offered are the various scientific inventions and conveniences of modern life.

2. More significant and possibly more enduring values may be some such as these:

    a) The abandonment of old superstitions by establishing new conceptions. These conceptions may concern space, time, change, adaptation, man's attempt to control his environment and various interrelationships.

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These are conceptions which serve as interpretative ideas and may help the individual to understand better the natural and social events of the universe about him. 1/

b) Teaching of such attitudes may help to lead the growth of the individual into the line of scientific truths. The purpose of such instruction is not along lines of small content items but rather is an expression of significant ideas which may contribute to growth in the understanding and interpretation of both our heritage of man's past experience and our problems of new experience. 2/

If a background of ideas and experiences is developed within and around the individual, such concepts may become a daily part of the individual's thinking power and an influence in the direction of his subsequent action.

It may be that only through the media of the elementary school can such concepts be brought to the minds of the children. If the elementary school is to carry out effectively its purposes in establishing scientific conceptions, it becomes evident that a background of experiences instilled from the earliest grades in the primary school is necessary. In this way, the child can from an early age be familiar with the rudiments of a scientific vocabulary; his senses can be made keener and more alert to the life and the existing conditions of his own home and community.

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The elementary school is the school of all the people. From these classrooms will come the future scientists and the future layman. It is for the future layman that the purposes and concerns of this early education are to be aimed. It is on this early level of schooling that the challenge of education is contained, for it is here and for but a brief time that the school may attempt to reach all the children of all the people.

As we move past the elementary school level, the process of elimination begins. Education becomes more and more specialized and is directed toward the future scientists or future specialists in various fields of learning.

The purpose of the primary and the elementary school is to try to help develop and encourage the potential specialists but also to awaken and direct the thinking of the child who will not be going into specialist fields, but who will constitute a large part of his future group.

The world itself is becoming more and more a place for specialists. Haphazard, casual reasoning based on prejudice, superstition or indifference, will not further the development of the individual or be of much benefit to him in successful adjustment to problems which may confront him.

It is important that we develop an awareness within the individual to realize the importance of basing conduct upon the best expression of truth available at the time. Myths,

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hearsay and gossip are barriers to progress. It is only by developing a critical attitude, a questing mind and a desire for just action that any progress can be made.

Such attitudes of thought and behavior cannot spring full grown, but must be inculcated from the earliest age. It would seem that the schools could wield the greatest influence, attempt to establish desirable habits of thought, and reach the greatest number of people, if such scientific education were begun in the lower primary school.

Definition of terms used.--

Content items refer to the traditional subject-mastery method of education. Organization of content items included lectures, recitations, tests, etc. This type of program was built with the idea of producing specialists in various fields. It was not concerned with the layman. It made little attempt to guide the growth of the individual toward large values and greater understanding of himself and the environment within which he lives.

The present-day trend for Science in the elementary school is concerned not so much with small content items to be memorized, recited, and written on test papers, but rather to develop large values and wide objectives which may benefit the education of children in an environment of an age of science. Craig [3] states:"... content is valuable only in so far as it meets the need of child and of society."

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Scientific conceptions have been referred to as "permanent massive facts of life." [4] This does not mean that our interpretation of such facts may not change, but rather that there is permanence in human challenge. Conceptions are not mere content, but are interpretative ideas serving to help the individual adjust and better understand the society and the universe within which he finds himself.

A conception to be valid should be universal in character and not limited in any sense to one race or to one form of society. The following are some general conceptions from which various objectives of study in the elementary school might be drawn:

Space is vast.

The surface of the earth has not always had its present appearance and is constantly changing.

Life has developed from simple forms.

The sun is a source of energy.

All matter is probably electrical in structure.

The earth and its life are greatly affected by the ocean of air, which completely surrounds the earth.

Light is indispensable to life. The phenomena of light and the applications that man has made of it are important to his continued progress.

Through the interdependence of species and the struggle for existence, there tends to be maintained a balance among the many forms of life. [5]

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Scientific attitudes are the values and objectives which may be encouraged in the thinking of the individual at the elementary school level. These scientific attitudes grow out of the development of a problem based upon a scientific conception.

Some scientific attitudes

Man's conception of truth changes.

Much knowledge remains to be discovered.

Conditions favorable to life are likely to persist on the earth for a very long time;no catastrophe for the entire earth is probable for an immense period of time. 6/

Social attitudes . Study and development of scientific conceptions may develop scientific attitudes which may in turn direct the individual into paths of thought and action utilizing desirable social attitudes.

Some social attitudes

We should not depend on mere hearsay and gossip; unwarranted prejudices against others should never be allowed to influence our actions.

No two living things are exactly alike,although they may be of the same kind. We should not base our ideas of foreign peoples upon one individual foreigner whom we have known.

Science is international in scope. The discoveries we study in science have been produced by men of many nationalities.

In science, the earth must be considered as an entity; a disturbance in the physical or biological world in one part of the earth may have significance for other parts. In a community, a fire in one section is the concern of the entire community. A

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> disease or a pest in one section of the world may become the concern of all peoples. Nations, therefore, should work together in an intelligent way for the welfare of all peoples. 7/

Age levels. Craig divides his sequence of science into three levels :

1. Lower primary, ages 5-8.
2. Primary, ages 8-10.
3. Intermediate, ages 10-13. 8/

This study deals with the lower primary level. The specific work was carried out with a second grade, age range 7-8. With deviations and additions, some of the principles utilized might be worked out with a slightly lower age level, and with a slightly higher age level.

7/ Craig, Ibid., p.19.

8/ Craig, Ibid., p.518.

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7/ Craig, Ibid., p.19.

8/ Craig, Ibid., p.618.

CHAPTER II

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A Study of Science in the field of Primary and Elementary Education reveals a great disparity in the formulation of the purposes and philosophies of such instruction.

In 1902, Hodge[9] in his book, Nature Study and Life, states:

> In basing a plan of nature study upon its human values it may be necessary to explain what is meant by the worth of the study in the curriculum. Throughout all the details of the various kinds of values we shall discuss, the paramount value to be aimed at is character, will to do good, power to create happiness. No lesson that does not contribute toward this end can claim the right to a place in the course.

Munson[10], in 1903, states the aims of teaching science to be these:

> To briefly summarize, then, our task seems to be: (a) to impart(knowledge,power); (b) to train (sense perception, thinking, judgment, imagination, expression); (c) to develop (the sense of right and truth, the sense of the beautiful, higher ideals, character). Let us keep these things in mind in developing our method.

9/ Clifton F. Hodge, Nature Study and Life. Boston:Ginn and Company, 1902, p.17.

10/ John P. Munson, Education Through Nature Study, Foundations and Method. New York: E.L. Kellogg and Company, 1903, p.86.

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In 1911, L.H. Bailey [11] in his book, The Nature Study Idea writes:

> We are to open the child's mind to his natural existence, develop his sense of responsibility and of self-dependence, train him to respect the resources of the earth, teach him the obligations of citizenship,...quicken his relations to human life in general, and touch his imagination with the spiritual forces of the world.

Trafton [12], in 1911, succinctly states the purposes of science instruction to be these: "In the lower grades the dominant purpose shall be the aesthetic; in the upper grades the dominant purpose shall be the economic and social."

According to Noll, [13] in his book, The Teaching of Science in Elementary and Secondary Schools(1939), the aims of science teaching before 1850 were two: first, it was believed to have informational value and secondly, religious value. The textbooks contained much miscellaneous material and many isolated facts. Thus the science textbook was largely encyclopedic in character. Learning, at this time, involved memorization of names, classifications, etc.... This was believed to be beneficial to the person who wished to be well educated. Botany, zoology, and some of the physical sciences were believed to give the pupil a better understanding of God through a study of living things and natural events.

11/ L.H. Bailey, The Nature Study Idea: An Interpretation. New York:(4th ed. revised) Macmillan, 1911, p.11.
12/ Gilbert Trafton, The Teaching of Science in the Elementary School. Boston:Houghton Mifflin, 1918, p.196.
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Noll[14] goes on to record that from 1850 to 1910, the emphasis on the aims of teaching science began to change. The religious aim began to disappear; the informational aim persisted; a new aim appeared and became prominent-- this was known as the disciplinary aim. This aim inferred that through science instruction various desirable traits could be developed in the individual. At this time, laboratory instruction became popular, and it was thought that the disciplinary values could be strengthened through such instruction.

Men like Huxley, Spencer, and Eliot were strong believers and exponents of this so-called 'disciplinary' aim in science. They expressed many convictions on the matter both in writing and in speeches. But by the close of the nineteenth century, this theory of formal discipline was subjected to experimental study. The results of these experiments showed that the transfer of training from one function to another was so small as to be negligible. After this, the idea of formal discipline fell into disrepute, and science lost much of its prestige. Enrollment in science courses, especially at the secondary level, began to decrease.[15]

Noll[16] continues his historical survey by saying that since 1910, science teaching began to regain lost ground and

14/ Victor H. Noll, op. cit., p.5.

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Since 1910, there have been varied and comprehensive statements of the aims of science teaching. Noll after summarizing the study of statements of aims brings out the following statements of facts gathered from his study :

1. There is a great emphasis on knowledge aims at all levels. This was found to be the case no matter what sources were consulted.

2. The development of desirable habits is the second most frequently-mentioned aim of science teaching in elementary and junior high schools, but is considered of minor importance in the senior high school.

3. These findings point to the change in emphasis upon aims as we proceed up the science ladder from elementary science to chemistry and physics. The emphasis on knowledge of facts and principles and on development of skills increases; that on knowledge leading to an understanding of the nature and organization of the environment that decreases, as does also the emphasis on habit formation and development of appreciations. Undoubtedly, these changes in emphasis reflect, in part at least, two influences, one being that of college entrance requirements, and the other, a difference in function between elementary and secondary schools.

4. A relatively small amount of emphasis is placed at all levels upon the development of attitudes. With few exceptions the relative frequency of mention of scientific attitudes as an outcome of instruction in science is surprisingly low. The

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4. marked agreement of the data on this point leads to confidence in their validity. However, it is encouraging that 15.4 per cent of the sources in the present study do mention scientific attitude.

5. A surprising fact brought out by these data is the relatively small importance attached to health and development of health habits. Even in the elementary science, the health aim constitutes only 5.3 per cent of those mentioned, and it receives mention as an aim in only 16.7 per cent of all sources. 17/

G.S. Counts 18/ in making a survey of the aims of science instruction as shown by study of curriculums of high schools in fifteen cities in different parts of the country makes the following statement:

> There is one rather severe criticism which may be applied to the entire science program in the high school with the exception of the course in general science. Most of the courses seem to lack human interest. The materials are organized about the interests of scientists rather than about the interests of high school boys and girls or of ordinary persons....

Further on in the report Counts states:

> ...That science has profoundly modified the prevailing conceptions of the world and has been instrumental in transforming the material world in which men live must be admitted, but the science courses have not been organized and taught so as to give the pupil a feeling of this significance.

Noll 19/ says of this account that until teachers stop

17/ Victor H. Noll, op. cit., pp.8-9.

18/ G.S. Counts, The Senior High School Curriculum, Supplementary Educational Monographs, No. 29. Chicago: University of Chicago Press, 1926, p.11.

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F.G. Billig [20] in her study, A Technique for Developing Content for a Professional Course in Science for Teachers in Elementary Schools, (1930), states that in a survey of 198 teachers' colleges and normal schools located in forty-one states, the catalogues for the academic years 1927-1928-1929 show 146 of them offering some type of course in science designed for teachers in elementary schools; 106 of these schools made this a required course.

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> Nature Study- A course intended to give the general knowledge of nature which is needed by the teachers in lower grades.--Southwest State Teachers College, Springfield, Missouri Biennial Catalogue, July, 1928, page 64.
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Differentiated sections deal with nature study materials and methods appropriate to the Kindergarten-Primary or Intermediate grades.--Maryland State Normal School, Towson, Maryland, Announcement, 1928-29, pages 34-35. 21/

A survey of Table I (Billig) which includes titles of Science courses indicates that more than 139 of the courses included the words'Nature Study' somewhere in the title. This can be contrasted with the words 'Elementary Science' which appeared in only thirteen titles. Other titles were: Plant Life; Animal Life; Biology; School Gardening. 22/

In the Billig 23/ study(1930) it was shown that of 954 students enrolled in science courses of 14 teacher-training

21/ F.G. Billig, op. cit., p.2

22/ Ibid., pp.2-3.

23/ Ibid., p.95.

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[21] T.G. Billig, op. cit., p.8

[22] Ibid., pp.5-8.

[23] Ibid., p.95.

institutions,55.03 per cent of the students had secured some scientific background from the high school; 43.71 per cent had received some training in high school and some in college. This means that 98.74 per cent of the students enrolling in a teacher-training science program had a preparation that was predominantly high school training.

This high school training showed evidence of much variation. General Science had been studied by 54.19 per cent; Physics studied by 41.67 per cent; 40.67 per cent had studied Chemistry; 37.11 per cent had studied Biology. Of all other sciences studied in high school, the rating was 21.06 per cent or less. Such variation of training showed that there could be no definite body of knowledge upon which a professional course for teacher training could be established. 24/

Billig developed in her study the following points and recommended them..."As a means of selecting and organizing core and marginal content for a professional course in Science for teachers in elementary schools." 25/

The summary follows:

1. The organization of teaching materials around large principles of science which serve as guides in the selection of content.

24/ F.G. Billig, op. cit., p.96.

25/ Ibid., p.91.

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[24] V.G. Billig, op. cit., p.96.

[25] Ibid., p.91.

2. The derivation of the elements of content by means of an analysis of literature written by experts for the specialist and for the lay reader, together with an analysis of outlines of science in use in elementary schools.

3. The selection, by means of criteria, of core materials which consist of those elements which relate directly to the principles of science and without which their suitable realization could not be attained.

4. The selection, by means of criteria, of marginal materials which consist of those elements contributing to an enriched background of experience enabling the teacher in training to secure enlarged interpretations of core material and which, at the same time, give him the security in his subsequent teaching which comes only through adequate preparation.

5. The evaluation of the elements selected as core and marginal materials on the basis of experience and judgment of instructors who have had broad training in science and who are primarily interested in training teachers to teach in elementary schools.

6. The organization of elements into teaching units in such a way that, as the teaching progresses, the simple elements will form more and more complex associations which will develop gradually an understanding of the principles in the minds of the learners. 26/

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26/ F.G. Billig, op. cit., pp.91-92.

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entitled "The Objectives of Science Teaching in Relation to the Aim of Education" by S. Ralph Powers,[28] says that principles and generalizations are objectives. The test to determine what principles or generalizations should be used is their usefulness and extent to which they relate to the welfare of human beings.

With these major generalizations come their associated scientific attitudes and these are of such importance that understandings of them are made the objectives of science teaching. In this article Powers goes on to state:

> ...it is proposed that the curriculum in science for a program of general education be organized about large objectives, that understanding and enlargement of these objectives shall constitute the contribution of science teaching to the ultimate aim of education, and that the course of study be so organized that each succeeding grade level shall present an increasingly enlarged and increasingly mature development of the objective. [29]

Powers [30] further recommends that in order to give understanding to major generalizations, the organization of learning experiences must be carefully integrated. Related subjects should be brought together. These subjects should be developed into learning experiences. From this learning will come ideas which may be developed into generalizations and principles.

28/ S. Ralph Powers (Chairman of the Committee on Science Teaching) "A Program for Teaching Science", Thirty-First Yearbook of the National Society for the Study of Education, Part I, Bloomington,Illinois: Public School Publishing Co., 1932.

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The Committee recognizes the aim of education to be 'life enrichment'. Keeping this in mind,Powers states : "...objectives of science teaching to be the functional understanding of the major generalization of science and the development of associated scientific attitudes." 31/

Chapter X of the Thirty-First Yearbook is entitled, "The Program of Science in the Elementary School," and was written by G.S. Craig. Craig 32/ writes that the first task in developing a course of study in science is the selection of content. This selection may take place with the constant realization of the place and function of the Elementary School in modern society. That primary purpose is the education and the development of intelligent laymen. This is opposed to objectives of the past which largely stressed the vocational and specialized teaching of content items.

Orra E. Underhill 33/, in his book, The Origins of Elementary School Science (1941), establishes the study of science for children into six chronological periods. The first period briefly describes the beginnings of science for children and the dates are circa 1750-1850. This period included materials

31/ S. Ralph Powers, op. cit., p.57.

32/ Gerald S. Craig, "A Program for Teaching Science", Thirty-First Yearbook of the National Society for the Study of Education, Part I. Bloomington,Illinois: Public School Publishing Company, 1932.

33/ Orra E. Underhill, The Origins of Elementary School Science Chicago: Scott Foresman and Company, 1941, p.7.

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33\ Orra E. Underhill, The Origins of Elementary School Science Chicago: Scott Foresman and Company, 1941, p.7.

of science which were put into children's books to serve as instruction. These were called "the didactic writings" and the authors were referred to as "the didactic writers." 1800-1825 saw the height of the influence and use of such writing.

Much of the early instructional literature for children was written in dialogue and story form to be used first by tutor and parent and later to serve as the earliest school tests. These books were based on the educational theories of Locke and his followers. In these earliest forms of general instruction reading there can be found traces of science. Some of the books contained discussions in dialogue concerning water, fire, cold, autumn, and similar subjects.[34/]

Robert Copeland[35/] (1508-1547) wrote The Secret of Secrets of Aristotle which he described as "very good to teach children to read." Chaucer[36/] compiled many translations from the Latin to the English concerning descriptive and observational Astronomy. When his son, Lewis, asked him to explain the use of an astrolabe, Chaucer answered him by writing an interesting scientific treatise.

34/ Orra E. Underhill, op. cit.

35/ The authorship is attributed to Robert Copeland by the Dictionary of National Biography, Vol.XII, but is given by Florence Barry, in A Century of Children's Books, London: Methuen and Co.Ltd., 1922, as William Copeland.

36/ Geoffrey Chaucer, Complete Works, (ed. W.W. Skeat), Oxford: Clarendon Press, 1894-1897, III, pp.175-241.

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Many educators have referred to Comenius [37] as the first to introduce the study of nature in the schools. These studies were used as a means of building vocabulary, but today such topics would be termed elementary school science.

The second chronological period as outlined by Underhill is from 1825-1860 and describes early science in the schools. This is a period in which group instruction in schools was begun. Many of the special texts and readers contained science materials; those books contained the most materials which were later to influence future science programs and were published between 1850 and 1870. [38]

The didactic writings of the early 1800's form the origin of the elementary-school program. And early writers were dominated in their writings by strong religious influences. Materials used at this time made use of "explicit statements of purpose in terms of religious values." [39]

Mrs. E.M. Fields [40], in speaking of some of the books appearing at the latter part of the 18th century says:

37/ Comenius, Orbis Pictus, 1728 ed. tr. by Hoole. London: T.H. Sprint, The Tuana Linguarum Reserata, 1631.

38/ Orra E. Underhill, op. cit., p.7.

39/ Ibid., p.21

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> About this time there began to appear the earliest of those little books which endeavored to give information on all manner of subjects; History, Astronomy, Science, Natural History, Botany, Manufactures. Sometimes the learned tutor takes his pupil for a walk and discourses on all they see; or else,Harry, thirsting for knowledge, extracts it by questions from a remarkably accurate and omniscient mamma.

Writers who gave emphasis to science were Mrs. Anna Barbauld(1743-1825) who worked much of the time with her brother John Aiken, a doctor, well known for his work in science. Both her father and her husband conducted schools. Maria Edgeworth (1769-1858) was another writer of influence and her father, a scientist, was identified with the introduction of elementary science into the school curriculum. Also, a Mrs. Marcet (1769-1858), wife of a physician and experimental chemist, was noted for her books, and at the time of her death, many schools were using her books as texts.[41]

As the influence of this new science became firmer, many efforts were made to reconcile religion and science. Many of the writers who followed the Edgeworths and Mrs. Barbauld were poorly informed in the facts of science and more concerned with religious implications.[42]

The aims of science expressed at this time were such statements as : "better to comprehend the great plan of God in creation;" "the central aim is the unity of nature and its expression of a perfect God through a perfect self;" "to

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[48] Ibid., p.23.

teach moral lessons;" these and similar expressions told the aims and purposes of science at this time.[43]

An example of this is seen in the introduction of one of S.G. Goodrich's[44] works concerned with the study of natural science:

"We call them (scientific investigations) studies of nature; but they are in truth, studies into the ways of God... The true mode of pursuing scientific studies is to regard them as investigations into the work of the Almighty....."

A summary of this period as given by Underhill contains these points:

1. First-hand study of things and phenomena made up a significant part of the didactic writings for children. These writings were specifically designed as instructional materials and were used to some extent in the schools of the United States during the first half of the 19th century.

2. Among the most influential of the didactic writers were a few who strongly emphasized the sciences. These individuals were in most cases exceptionally well-educated and well-informed, both as to science and the educational theory of their time.

3. Although the writings of these individuals reflected liberalizing tendencies of the time, the conservative and reactionary forces, which usually are strong factors in shaping school

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44/ Samuel G. Goodrich, A Glance at the Sciences. Boston: Rand and Mann, 1849, pp.5-6.

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3.(cont.) procedures, prevented these writings from exerting much influence. Some of the science materials, found their way into school texts and readers.

4. Because of the dominant influence of religious thought, the science was frequently distorted in order to serve as support for the arguments of a "natural theology."

5. Attempts to utilize the science as a means of training in reflective thinking resulted in considerable emphasis on the form and definitions of classified science.

6. The best of the didactic writings was based in large part upon the theories of education embodied in the works of Locke and Rousseau. They reflect the emphasis on (1) a psychology of learning which looks to first-hand experience with things and phenomena of nature as the source of ideas, and (2) a methodology which provides satisfying activity on the part of the child.

7. There may be found revealed in these writings elements which still are considered valid in terms of present-day programs of elementary-school science. 45/

The third chronological period as established by Underhill is the period (circa 1860-1880) called Object Teaching. This type of instruction is generally accepted to be a forerunner of elementary science. Underhill feels that while this is,to some extent, true in the upper grammar grades, it is less true in the early grades. In the primary grades children's literature is seen as the forerunner to

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[45] Otis E. Underhill, op. cit., p.46.

a science program. Object teaching was an attempt to utilize the study of things and phenomena and was presented under highly formal methodology. Interest in this type of presentation gradually lessened and attention again began to focus on science as a subject. 46/

The next period(fourth) (circa 1870-1900) deals with the development of science curricula. These curricula had varied purposes and interpretations. The three of the widest significance were: Harris curriculum (1871); the writings of the McMurrys (1895-1900), and Jackman and associates(1890-1900) at the Cook County Normal School.47/

A fifth division represents the period(circa 1890-1920) which was characterized by nature study. It was during this period that countless Nature Manuals appeared. Introduction of nature study into the schools was hailed with enthusiasm. Criticism of this movement was centered not so much on the procedures and objectives of the leaders but on the "interpretation which was given to the educational theory they expressed." 48/ Many of these procedures and modes of thinking are influential in the thinking of many teachers of the present day.

46/ Orra E. Underhill, op. cit., p.7.

47/ Ibid., p.8.

48/ Ibid., p.8.

[46] Dyre B. Underhill, op. cit., p.7.

[47] Ibid., p.8.

[48] Ibid., p.8.

Concerning the sixth chronological period called Recent Trends (circa 1910-1939), Underhill says:[49]

> Recent trends are characterized by the attempt to formulate a program which gives conscious attention to the part played by generalization in the learning process. This program has its roots in Jackman's work and has been influenced by Dewey's How We Think(1910), and his later writings. A more dynamic concept of science is being stressed which emphasizies its techniques and habits of thought as part of a way of life by means of which the individual may interact with his changing environment in such a way as to promote a satisfying adjustment within the framework of a democratic social order.
>
> Each of these six periods shades almost imperceptibly into the next,with many of the trends overlapping to a considerable extent chronologically. Moreover, the second, fourth, and sixth periods form one continuous development, with its roots in the children's literature. Object Teaching and Nature Study represent, rather, interludes in a general trend, during which emphasis was placed on methodology at the expense of understanding.

The claim of those who elaborate the theme of Object Teaching is that it is a method and not a subject. Its purpose is to proceed from the simple to the complex. It was (as a method) usually applied by a formalized type of questioning. Writers of Object-Teaching manuals carried these principles into specific lessons. The concept of "higher" and "lower" faculties was developed. The result was a serial development of education which placed definite emphasis on memory and observation in the lower grades and deliberately attempted to eliminate attempts at developing reasoning ability.

49/ Orra E. Underhill, op. cit., pp.8-9.

Concerning the sixth chronological period called Recent Trends (since 1930-1939), Underhill says:[49]

> Recent trends are characterized by the attempt to formulate a program which gives conscious attention to the part played by generalization in the learning process. This program has its roots in Jacobsen's work and has been influenced by Dewey's How We Think(1910), and his later writings. A more dynamic concept of science is being stressed which emphasizes its technique and basis of thought as part of a way of life by means of which the individual may interact with his changing environment in such a way as to promote a satisfying adjustment within the framework of a democratic social order.
>
> Each of these six periods shades almost imperceptibly into the next, with many of the trends overlapping to a considerable extent chronologically. Moreover, the second, fourth, and sixth periods form one continuous development, with its roots in the child's literature. Object Teaching and Nature Study represent, rather, interludes in a general trend, during which emphasis was placed on methodology at the expense of understanding.

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[49] Otis E. Underhill, op. cit., pp.8-9.

Salmon[50], in his book, Longmans' Object Lessons (1873), states: "The study promotes the growth and vigour of the faculties employed in observation, classification, generalization, and inductive reasoning; but of these the faculties employed in observation are most active in young children, the others being dormant or altogether absent."

Underhill[51] in his summary of this type of instruction says:

> 1) Object Teaching was a complex methodology based upon the principles of the faculty psychology. The attempt to apply these principles, as interpreted by Pestalozzi and his followers in England, emphasized (a) analysis of instructional materials into its simplest elements, which are to be taught first, and (b) separation of perception, conception, and reasoning into serially developing faculties.
>
> 2) Assumptions of a serial development of the faculties led to emphasis on observations and memory in the lower grades.
>
> 3) Although the emphasis on method resulted almost in neglect of the function of organized knowledge in the thinking process, the selection of lessons and method of presenting individual lessons indicates that the specialized sciences exerted some influence on these materials.
>
> 4) Although the fundamental purposes of Object Teaching were expressed in terms of training the faculties, it was often considered as a technique for imparting useful information.
>
> 5) The science presented in the Object-Teaching materials frequently rationalized to give support to the Christian theology.

50/ David Salmon, Longmans' Object Lessons. New York: Scribner, Armstrong, 1873, pp.5-6.

51/ Orra E. Underhill, op. cit., p.84.

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6) The extreme formalism with which the theories of Object Teaching were put into practice led to the very meaningless memorization and verbalism which the educational reformers were trying to avoid.

7) The specialized methodology, together with the emphasis on objective materials to the exclusion of books, made heavy demands upon the ability and the knowledge of the teacher. 52/

As interest in Object Teaching waned, a strong demand for science in the elementary-school program became evident. Industrial expansion based on theoretical science and technology caused science to be looked upon as a "practical" as well as a "cultural" subject. 53/

William T. Harris is generally credited with the first general plan for an elementary-school science curriculum. A preface to an 1887 edition says, "it has been accepted for sixteen years as the best presentation of the subject."54/

His elementary-science curriculum was based upon a philosophical foundation and it emphasized ideas and their relationships. It was the first detailed elementary-science curriculum to have influence on education.55/

52/ Orra E. Underhill, op. cit., p.92.

53/ Ibid., p.93.

54/ Ibid., p.100.

55/ Ibid., p.153.

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[54] Ibid., p.100.

[55] Ibid., p.153.

The McMurrys,[56] Charles, Frank and Lida, exerted great influence on educational theory and practice through their writing, teaching, and lecturing. The basis for many of the teacher-training courses in the normal schools were formed from their theories and influence.

The elementary-school science program as expressed by them resulted in making science incidental to history and literature. It tended to minimize the influence of specialized science organization.[57]

Francis Wayland Parker[58] was a strong influence in using science as the unifying principle for the elementary-school curriculum. He supported the work of Jackman and Straight along this line at the Cook County Normal School, later the Chicago Institute, and finally at the School of Education of the University of Chicago. Parker's influence in science teaching in the elementary school has been very great. The effects came largely through the work of Jackman and Straight who have taught and directed the science work of the practice schools of the University of Chicago School of Education. Here for the first time was presented an elementary-science program which aimed at giving an understanding of the universe and emphasized scientific techniques as a method of problem solving.

56/ Charles McKenny, "The McMurrys in American Education," Peabody Journal of Education, March, 1928, 5:262-268.
57/ Orra E. Underhill, op. cit., p.153.
58/ Ida C. Heffron, Francis Wayland Parker. Los Angeles: Ivan Deach, Jr., 1934, pp.24-25; Massachusetts, Quincy School Report (1880-1881), p.1.

Wilbur S. Jackman[59] first planned an elementary-school program in 1899. His course of study is outlined in the Cook County Biennial School Reports for 1890-1892. Jackman and others, under the leadership of Parker, tried to formulate an elementary-school program in which science was the core. Jackman emphasized the part played by"generalizations of science as guides to organization..." [60]

Religious influences were still strong, but there was little trace of this influence in the programs of Harris, the McMurrys, and Jackman. The trend that they aim to establish is"... to seek for behavior controls in terms of cooperative group behavior based on intelligent understanding of the social problems involved rather than on theological principles." [61]

Underhill,[62] in his summary states :

> 5... Conflict between "cultural" and "practical" values resulted in much confusion of thought with regard to the ultimate purposes of the elementary-school program. The most influential through their relationships to teacher-training programs supported a more generalized approach to science in terms of cultural and disciplinary values, whereas those more directly associated with control of the schools more often supported science in terms of vocational values. Each of these groups tended more or less to rationalize its position in terms of both types of values.

59/ Wilbur S. Jackman, Nature Study for the Common Schools. New York: Henry Holt, 1891.

60/ Orra E. Underhill, op. cit., p.153.
61/ Ibid., p.154.
62/ Ibid., p.153.

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[60] Dora E. Underhill, op. cit., p.185.
[61] Ibid., p.184.
[62] Ibid., p.185.

7...Although faculty psychology continues to dominate the thinking of many, educational theory is shifting the concept of mental discipline away from an exercising of specific faculties and toward a more generalized idea of mental discipline. This tends to oppose the limitations of the study of nature by young children to observation only, and emphasizes the significance of insight and understanding in reflective thinking.

9...All of the science programs proposed continue to give increasing emphasis on the need of first-hand observation and experience. Changing viewpoints as to the nature of mental activity, the growing importance of the laboratory method in science, and increasing attention to the child as a biological organism all tend to emphasize experimentation and problem-solving types of activities instead of mere observation and description.

10. The programs of elementary science proposed during the last half of the nineteenth century failed to affect practice, largely through the lack of teachers able to handle the program. 63/

At this time (circa 1890-1920), the so-called Nature-Study movement swept the country. There was a diversity of purposes as set forth by the many proponents of this movement.

Underhill sets forth a series of outcomes, paraphrased from various sources published in 1906.

> To help the child become familiar with the things about him; to appreciate them for their value, to love them for their beauty.
>
> To bring the child to a living sympathy with everything that is.
>
> To give things their true ethical value.

63/ Orra E. Underhill, Loc. cit.

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65\ Cyrus E. Underhill, Loc. cit.

To keep alive the office and use of poetry, particularly the form called verse.

To appreciate nature descriptions in literature.

To make his surroundings more attractive to the country child on the farm.

To give appreciation of the practical value of living phenomena.

To cause the child to appreciate for no other reason aside from loving them 'plants and animals'. 64/

There were many voices raised in opposition to these varied nature study aims. Some of the criticisms were :

Emphasis almost wholly upon biological materials.

Anthropomorphic explanations

Culture-epoch theories as a basis of organization

A study of isolated and unrelated phenomena which lacks organization.

Emphasis on poetry and myth

Work incidental to that of some other subject

Methodology based on the assumption that children cannot reason in the early grades.

Extravagant claims for emotional and aesthetic outcomes

Emphasis on identification and the learning of isolated bits of fact. 65/

64/ Orra E. Underhill, op. cit., pp.171-172.

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Underhill states that the criticisms which seem to have the greatest significance in terms of influence on present-day trends are:

> Lack of organization
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> Assumptions as to difference in kind of reasoning ability at different age levels.
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The attitudes of sentimentalism, imaginative sensibility and the general attitudes of romanticism as expressed in the writings of the day (circa 1890-1910), and the general attitudes of the people resulted in the Nature-Study type of program. In this way emphasis could be placed on various aesthetic values and expressed through terms of emotion and sentiment.

From the very beginning of the program, Nature Study had its critics. The most important and valid of these criticisms were :

> Lack of organization
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> Limitation of children's capacity to reason
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> Extravagant claims for emotional, sentimental, and aesthetic values. 67/

In the summary of this section Underhill states:

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7. Assumptions as to the nature of children's interests and their part in motivating learning led to the assumption that the immediate and casual interests of children should be the leading factor in the selection of what is to be studied. Nevertheless, details of programs as given in Nature-Study manuals reveal that the organization of the specialized sciences was an influential factor in the selection of materials and methods of presentation.

8. Continued emphasis on first-hand observation and 'nature not books'led in practice to seasonal organization of materials, theoretical emphasis on field trips and out-of-door nature experience, and identification as an end in itself. In spite of this emphasis(in theory) on first-hand experience, much of the material classified as Nature Study was in the form of reading materials and stories about nature, and a great deal of this was fable, myth and fairy tale.

9. One of the chief characteristics of Nature Study was its use of anthropomorphic interpretations of nature as a means of stimulating the imagination and arousing interest.

10. Although theoretical discussion usually advocated a well-rounded program including the physical sciences, in practice Nature Study came to be considered as dealing almost wholly with biological nature. This was probably owing to the greater ease with which such materials could be obtained and handled by teachers untrained in science, and to the fact that those most interested in introducing Nature Study into the schools were largely specialists in the biological sciences. 68/

Craig 69/ states that selection of objectives should conform to these conceptions: "(1) that greatly influence the thinking of the individuals who learn their meaning, and (2) that have modified thinking in many fields outside of science"

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An example of a concept and the range of interpretation that it can have from the Primary grades to adulthood may be seen in the following: "Species have survived because by adaptation and adjustments they have tended to become better fitted to the conditions under which they live." 70/ This concept can include such matters as: migration, hibernation, parental care and social life among animals. The subject of migration can be developed to show a means of adaptation to environment. It can be shown that parental care of some animals has assisted them to survive.

From the range of development in this concept it can be seen how it could be an objective of study from the Primary School and up. Development of this concept allows for continuous growth of the individual in increasingly enlarged understanding of concept. The basic aim of this concept is not isolated facts about the lives of animals, but basic concepts which both develop and challenge thought.

Craig states as another criterion to judge the value of content: "Certain objectives that are selected for science in the elementary school should conform to those goals(information, skills, and habits) in science that are important because of their function in establishing health, economy, and safety in private and public life." 71/

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Individuals can lead a life better balanced in good physical and mental health if their understanding of basic health principles is part of their daily thinking. Science has close relationship to the economic problem of man and his environment. Existence and advancement of man depend upon wise modification and control of environment.

A third criterion as written by Craig[72]: "Certain objectives that are selected for elementary science should conform to those facts, principles, generalizations, and hypotheses of science that are essential to the interpretation of the natural phenomena that commonly challenge children."

Interest of natural phenomena studies reveals principles for interpreting such events. The child should be guided to interpret through observations and experiences. He should not be misled by nature myths, fairy tales, and animalism.

Selection and evaluation of objectives must be in terms suitable for the elementary school. One must be conscious of the stages of growth in interpreting natural environment. Identification and observation are only means to an end in view. Craig[73] states: "It is quite likely that the lack of recognition of natural science in the elementary school has been due to the inanity of the activities proposed by our courses of study and by the lack of any challenge in the content that has characterized so much of our subject matter."

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In developing concepts it must be realized that certain meanings must be learned earlier than others. One reason is some concepts are less involved and require less previous learning. Another reason is that some concepts are basic to the understanding of others. There is a natural order in the learning elements in science. Simple meanings precede those more complicated and an understanding of these degrees of complexity assists in content planning for grade placement. An example of the development of a concept follows. It can be seen how understanding of one concept leads the way to the understanding of each more difficult one. 74/

1. The sun is much farther from the earth than is the moon.
2. The light on the moon comes from the sun.
3. Our sun is a star.
4. The sun is larger than the earth.
5. The earth revolves about the sun.
6. Day and night are caused by rotation of the earth on its axis.
7. The stars are separated by very great distances.
8. Some stars are very much larger than our sun. 75/

As early as 1904, W.S. Jackman 76/ in the Third Yearbook called attention to the break between the science instruction in the elementary and secondary school. He urged a course

74/ Gerald S. Craig, op. cit., p.145.

75/ Loc. cit.

76/ W.S. Jackman, op. cit., p.150.

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[75] Ibid. cit.

[76] W.S. Jackman, op. cit., p.180.

continuous and uninterrupted from kindergarten through the college. This idea was not widely accepted, and the prevailing view was that no instruction prior to the high school was worth while.

At the present time, Craig 77/ and the Science Committee recommend that a continuous science program be developed in all schools. Bases for differentiating science material would be based on the increasing maturity of the children. The advantages of sequential organization of essential meanings and of having a course of study introduced through the early grades and to be continuous in development are:-

1. It assists the teacher-training schools by giving them a definite task-- a course to be professionalized.
2. It places the emphasis on meanings rather than on objects.
3. It provides the teacher with guidance which comes from research and study....
4. It suggests learning elements at grade levels appropriate for that learning.
5. It provides for proper balance rather than a narrow segment which might result if the teacher followed her own interests and preferences.
6. It provides for setting up new situations in later grades which may cause previous learning elements to be needed. 78/

77/ Gerald S. Craig, op. cit., p.158.

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[78] Craig, loc. cit.

SUMMARY

In the field of science education new subject matter is emerging. This new type of thinking is related to the function and nature of content. The traditional point of view was the subject-mastery type of instruction. This organization of content items aimed for development of specialists rather than educated laymen. Little attention was given to the growth of the individual toward larger values residing in the content fields.

From these traditional practices a gradual change has taken place. This change favors not content items but an area of thought believed useful in contributing to child growth in useful directions. Content now becomes a means and not an end in itself.

The present day has seen the desire to show science as a part of life and interaction of values and experiences. Thus, in planning instruction in science today, the aim is to develop a science program pliable enough to fit into the specific needs of a particular group.

Instruction must begin with the place where the children are in their thinking. Planning must have elasticity and depend upon the children and their ability and their interest

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in developing within the areas of a science program. The level of development will vary between groups and within the same group. In order that the enrichments and the interests of life can be better appreciated, it would seem that the beginnings of such instruction cannot be placed too early in life.

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CHAPTER III

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Problems for Teachers in Developing Science Programs.

The general aim of the science program may be to teach those conceptions which are basic to future desirable scientific attitudes. These conceptions are taught not as isolated facts to be memorized but are so surrounded by experience and inferences vital to the individual that critical thinking becomes a part of his habitual understanding of problems.

To further the aims of such science programs familiarity with those science problems which might conceivably confront a specific grade level must be understood.

A course of study, though useful as a guide, cannot be allowed to become too rigid. In order to keep vitality in the science program, instruction must be fitted to the particular needs of a specific group. Sequence between grade levels cannot be inflexible and unrelaxing. Considerable overlapping and various alterations of a program to fit the needs of a group must be allowed.

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Under the old forms of instruction there was little of interest to either teacher or child. The methods used were the question-answer type. Science instruction was stereotyped. The only challenge present was desire for good grades. There was no interest or place in such instruction for the young primary school child.

For the young child so-called science instruction was given under the cover of myths, fairy tales, and similar stories. Also, sentimentalism concerning 'Mother Nature' often became a part of a young child's science education.

Gerald S. Craig[79], in his book, Science for the Elementary School Teacher, says that the following concepts are elements of the scientific method which should be given opportunity to function in the lives of young children:

> Questioning magic as an explanation of events.
>
> Rejecting the personification of natural forces in explanation.
>
> Realizing that interpretations advanced by scientists today may be corrected and improved by the same or other scientists tomorrow.
>
> Demanding more evidence.
>
> Rejecting faulty thinking.
>
> Questioning superstitions, prejudices, astrology, fortune-telling.

79/ Gerald S. Craig, Science for the Elementary School Teacher. Boston: Ginn and Company, 1940, P.31.

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79\ Gerald S. Craig, Science for the Elementary School Teacher. Boston: Ginn and Company, 1950, p.21.

Craig[80] goes on to say that a problem to be solved must be clearly formed in the minds of children and of the teacher. It should be meaningful. It may need redefinition or further analysis. The development of such work affords both teacher and children an opportunity to develop critical thinking.

Craig[81] defines the four types of activity which may be used in developing science education. The following is a brief summary of four types:

I. Discussion.

This type of activity serves to clarify the problem. It brings to light that information or misinformation which the child may have on given phenomena. It is useful to stimulate interest and to develop future trends toward more fruitful instruction.

II. The Experiment.

By actually doing and feeling a certain problem through, its meaning may become more real and meaningful to the child.

III. The Excursion.

Observation of the outdoors, the effect of seasonal changes, study of soil, rocks and various other such items make the Excursion method of science instruction very valuable.

80/ Gerald S. Craig, op. cit.

81/ Ibid.

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IV. Reading.

Reading of authoritative material for reliable information offers a means by which the child can educate himself. The heritage of the past is handed down through the medium of printed material.

In developing experiences in science education use can be made of special interests and current events. A given area may be held in mind, but instruction must be adapted to response and reaction of the pupil group. In science, a subject can never be mastered or finished. There is always more to learn. Teaching should not push any one unit of science to the point of exhaustion of pupil interests. Such domination may lead to unnatural and forced correlation. The presentation of a too narrow segment of environment should be avoided. Pursuance of a wide range of problems, some of which may be developed in later years either as a hobby or as a future avocation, is desirable.[82/]

S. Ralph Powers,[83/] Chairman of the Committee on Science Teaching of the National Society for the Study of Education, states the Committee's point of view on learning and subsequent curriculum development as follows :

> The burden of evidence from studies in the psychology of learning and in individual differences is overwhelmingly in support of the theory of gradual and concomitant development of mental traits.

82/ Gerald S. Craig, op. cit.
83/ S. Ralph Powers,(Chairman of the Committee on Science Teaching) "A Program for Teaching Science", Thirty-First Yearbook of the National Society for the Study of Education,Part I, 1932, pp.5-6.

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> There is now a demand for a continuous and correlated program of study. The new theory requires a curriculum in which learning experiences shall be arrayed in such a manner that, as the child progresses, through successive grades, he will have opportunity for continuous enlargement of his knowledge of the problems, principles, and generalizations that scholarly men find worthy of study. This new interpretation of the process of mental growth has now such wide acceptance that it has determined the character of our institutions for elementary and for secondary education, but it has not yet had full recognition in determining the objectives, content, and method of study. Efforts to clear the field are in progress.

These studies have had widespread influence upon the development of science teaching of the past few years. West[84/], in his study, A Technique for Appraising Certain Observable Behavior of Children in Science in Elementary Schools,(1937), says of this Committee: "However, the originators of these studies are constantly considering educational problems with a view to making such changes as new evidence may indicate. The necessity of modification from time to time shows that science teaching is a dynamic process."

The general purpose of this study is to attempt to show that, since education is a continuous unfolding process, and since science is an integral part of daily living, development of scientific concepts should be begun at the earliest possible educational age and be continued as a part of a steadily growing program. Through a brief survey of the literature and the objectives of some of the leading educators in the development

84/ Joe Young West, A Technique for Appraising Certain Observable Behavior of Children in Science in Elementary Schools, Contributions to Education, No.728. New York:Teachers College, Columbia University, 1937, p.5.

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The specific experiment carried out was to attempt to develop in small part a concept of science through the medium of a workbook developed for this purpose.

Statement of the concept is: "Species have survived because by adaptation and adjustment, they have tended to become better fitted to the conditions under which they live."[85/]

Although the four types of activity previously mentioned, namely; discussion, experiment, excursion, and reading have been recognized as far as it was practicable or possible, it was not the purpose of this study to develop this wide range of material. Also, textbooks in regular reading groups and as supplementary readers were used, and certain related experiments were carried out in class, together with direct observation of outdoor activities.

A workbook was developed for a second grade group. Its purpose was to show in a limited way the seasonal and the resultant weather changes and the effect of such changes on plant, insect, animal, and human life.

The class group concerned thirty-three children ranging in age from seven to eight years. They are drawn from a town population of about 40,000 people. There are 17 schools in

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this system and approximately 250 teachers. In this particular section, the children come from an average income group with a scattering from the high income bracket and with a scattering from the other end of the scale.

These children have had three tests for measurement of mental intelligence. The first test, Detroit Beginning First Grade Intelligence Test[86] (Revised) was given in the first grade year. Two tests were given in the second grade: they were Kuhlmann-Anderson Test Grade II[87] and the Pintner-Durost Elementary Test[88]. Also, in the spring of the second grade year, two achievement tests were given: first, the Metropolitan Achievement Tests[89] and later the Stanford Achievement Test Primary Battery: Form D.[90]

86/ Anna M. Engel and Harry J.Baker, Detroit Beginning First Grade Intelligence Test(Revised). New York: World Book Co., 1944.

87/ F. Kuhlmann and Rose Anderson, Kuhlmann-Anderson Tests, Grade II. Philadelphia:Educational Test Bureau, 1942.

88/ Rudolf Pintner and Walter N. Durost, Pintner-Durost Elementary Test. New York: World Book Company, 1941.

89/ S. Bayne, F. Graham, H. Hildreth, Metropolitan Achievement Tests: New York City Edition: Form A. New York: World Book Company, 1944.

90/ T.L. Kelley, G.M. Rush, L.M. Terman, Stanford Achievement Test: Primary Battery: Form D. New York: World Book Company, 1940.

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The table of results is here included. These results are listed from the Highest to the Lowest in descending order. In order that test differences of the same pupils may be observed, the same code number for each child is used throughout the tests. The letter 'G' refers to 'girl'; 'B' refers to 'boy', and where a new pupil entered who had not had the previous test or tests, the letters were changed to 'M' (boy), and 'F' (girl).

The completed workbook is included in the Appendix. The Autumn-Winter sections dealing with the way in which plants, insects, animals, and people get ready for and survive the winter are the first two parts. General weather characteristics of each season are emphasized and contrasted, together with the effects which such weather changes have on life. The Spring-Summer sections are the last two parts of the book.

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Date 44-9-26 — Detroit Beginning First Grade Mental Capacity

Pupil-Case Number	Age [C.A.]	Sex	Score	M.A.	I.Q.
G-I	6	F	89	8-3	I38
B-I	6-4	M	89	8-3	I30
B-2	6-I	M	85	7-II	I30
G-2	5-I0	F	72	6-II	I29
G-3	5-7	F	7I	6-I0	I22
G-4	5-8	F	72	6-II	I22
B-3	5-8	M	69	6-9	II9
B-4	5-8	M	69	6-9	II9
B-5	6	M	75	7-I	II8
G-5	6-2	F	77	7-3	II8
G-6	5-II	F	73	7	II8
G-7	6-I	F	72	6-II	II5
B-6	5-9	M	64	6-7	II4
G-8	5-I0	F	62	6-7	II3
B-7	6	M	68	6-9	II3
G-9	5-7	F	53	6-4	II3
G-I0	6-I	F	68	6-9	III
G-II	5-6	F	46	6-I	III
B-8	6-9	M	80	7-6	III
B-9	5-8	M	49	6-2	I09
G-I2	5-I0	F	54	6-4	I09
B-I0	5-I0	M	55	6-4	I09
B-II	6-2	M	66	6-I0	I08
B-I2	6-I	M	60	6-6	I07
G-I3	6-5	F	7I	6-I0	I06
B-I3	6-2	M	50	6-3	I0I
B-I4	7-2	M	70	6-I0	95
B-I5	8-8	M	47	8-0	92
B-I6	7-3	M	I02	7-I	98
B-I7	7-5	M	95	6-7	89

Date 46-2-I — Kuhlmann-Anderson

Case Number	Age [C.A.]	Sex	M.A.	I.Q.
G-2	7-3	F	7-II	I09
G-3	7	F	7-5	I07
B-2	7-5	M	7-II	I07
B-I	7-8	M	8-2	I06
G-I	7-4	F	7-8	I05
G-4	7	F	7-4	I05
B-I0	7-2	M	7-5	I05
B-I2	7-5	M	7-9	I05
B-9	7	M	7-4	I05
G-I2	7-2	F	7-5	I03
G-8	7-2	F	7-6	I0I
G-II	6-I0	F	7-0	I0I
B-5	7-5	M	7-7	I0I
B-I3	7-6	M	7-7	I0I
B-7	7-4	M	7-4	I00
B-#3	7-I0	M	7-3	99
G-6	7-3	F	7-3	99
G-5	7-5	F	7-4	98
G-I3	7-9	F	7-6	97
G-9	6-II	F	6-5	93
M-I	8-3	M	7-7	92
B-I6	7-2	M	6-7	92
B-8	7-2	M	7-4	90
B-II	7-7	M	6-8	89
F-I	7-I	F	5-II	85
B-I5	8-II	M	7-5	84
B-I4	8-6	M	6-II	8I

Date 46-3-I4 — Pintner General Ability Tests Verbal: Form B

Pupil Case Number	Age [C.A.]	Sex	Score; Median Standard	M.A.	I.Q.
B-4	7-I	M	I27	9-4	I25
G-I	7-5	F	I27	9-4	I2I
G-I0	7-6	F	I24	9	II7
B-I2	7-6	M	I22	8-9	II5
G-6	7-6	F	I22	8-9	II2
B-I	7-9	M	I22	8-9	II2
G-I3	7-I0	F	I23	8-II	II2
G-4	7-I	F	II3	8	III
G-5	7-6	F	II8	8-5	III
B-5	7-6	M	II8	8-5	III
G-3	7-I	F	III	7-I0	I09
B-2	7-6	M	II5	8-2	I08
B-7	7-5	M	III	7-I0	I05
G-2	7-4	F	II0	7-9	I05
M-I	8-4	M	I22	8-9	I05
B-6	7-3	M	I08	7-7	I04
B-9	7-I	M	I06	7-5	I04
G-I2	7-3	F	I08	7-7	I04
G-II	6-II	F	I03	7-2	I03
B-II	7-7	M	II0	7-9	I02
G-9	7	F	I0I	7	I02
F-2	8-I	F	II4	8-I	I0I
B-I3	7-7	M	I09	7-8	99
G-8	7-3	F	I02	7-I	98
B-I6	7-3	M	I02	7-I	98
G-7	7-6	F	II4	7-3	97
B-I0	7-3	M	99	6-II	95
B-I8	8-7	M	II3	8	93
B-3	7-II	M	I06	7-5	9I
B-8	8-3	M	I07	7-6	9I
B-I7	7-5	M	95	6-7	89
B-I5	8-II	M	II0	7-9	87

Date 46-5-9 — Metropolitan A Achievement

Case Number	Age - C.A.	Sex	Total Achievement Score	Educational Age
B-2	7-8	M	349	9-3
M-2	7-5	M	346	9-3
B-I4	8-9	M	333	8-II
G-I2	7-5	F	332	8-II
B-4	7-3	M	332	8-9
G-I0	7-8	F	324	8-9
G-2	7-6	F	3I4	8-7
B-3	8-I	M	3I4	8-7
G-I3	7-9	F	3I0	8-6
G-4	7	F	3I0	8-6
B-7	7-7	M	309	8-6
G-3	7-3	F	307	8-4
B-6	7-5	M	304	8-4
B-8	8-5	M	302	8-3
G-5	7-8	F	30I	8-3
G-II	7-I	M	300	8-3
B-I	7-II	M	299	8-3
B-9	7-3	M	299	8-3
B-5	7-8	M	296	8-2
B-I2	7-8	M	293	8-2
F-2	8-3	F	29I	8-0
G-6	7-8	F	290	8-0
G-7	7-8	F	287	8-0
G-8	7-5	F	287	8-0
G-9	7-2	F	286	7-II
B-II	7-6	M	283	7-I0
B-I3	7-9	M	28I	7-I0
B-I5	9-I	M	28I	7-I0
M-I	8-6	M	27I	7-7
B-I6	7-5	M	270	7-7
B-I7	7-7	M	2I8	
F-I	7-3	F	2I8	

Each story is followed by a comprehension test check. Some stories are followed by several related exercises. For example, one comprehension check exercise is the True-False basis. This is headed: Yes or No

Directions: Read these sentences.

Some of these sentences are right.

Some of these sentences are not right.

Write the word Yes beside the sentences that are right.

Write the word No beside the sentences are not right.

1. All birds live in the North all winter. ____.
2. Some birds fly to the South for the winter. ____.

There are four similar exercises in this part; two of them follow stories about numbers.

Example: Yes or NO

7 birds are more than 70 birds.____.

7000 birds are more than 700 birds. ___.

700 birds are more than 70 birds but not so many as 7000 birds. _____

Another comprehension check type of exercise is one that consists of filling in blanks. A list of words is taken from the story; sentences from the story are written omitting one or more words; the object is to find the right

Each story is followed by a comprehension test sheet.
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Write the word Yes beside the sentences that
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7000 birds are more than 700 birds. ___.
700 birds are more than 70 birds but not so many as
7000 birds. _____

Another comprehension check type of exercise is one
that consists of filling in blanks. A list of words is
taken from the story; sentences from the story are written
omitting one or more words; the object is to find the right

word from the word list and write it in the blank space.

Example: Fill in the blanks.

black small

gray white

The chickadee is a _____ bird.

His coat is _____ and _____ .

He has a _____ cap.

There are three such exercises in this section.

Another type of exercise is the multiple choice, i.e., a sentence is completed with three or more answers- one of which is correct. The object is to find the correct answer, check it, underline, or in some way identify it.

Example:

Read these answers.

One answer is right.

Put a V beside the right answer.

A Woodpecker has a long,sharp tongue.

This helps him

1. Dig holes.
2. Stay on the tree.
3. Catch bugs deep in the tree.

A slightly more difficult example of the same type.

Directions:

Read these sentences.

Two of the sentences are right.

Boston University
School of Education
Library

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The other sentences are not right.

Find the right sentences.

Write each of them on the line below.

A Woodpecker pecks at wood

1. Because he eats wood.
2. Because he eats insects under the wood.
3. Because he wants to keep warm.
4. Because he wants to hide.
5. Because he wants a hole for his eggs.

(Lines are drawn below the exercise so that the correct answers can be copied there-on.)

Another variation of the same type exercise:

Question: Which word tells what the woodpecker's tail is like?

Put a circle around the word that tells you.

this soft little strong

A similar comprehension-type exercise is this one:

happy chick-a-dee-dee-dee

snow friendly (etc.)

Two of these words tell what the chick-a-dee is like.

Find them.

Write the words in the boxes.

(Boxes are drawn at the side of the page for this purpose.)

The other sentences are not right.

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Another exercise consists in guessing the names of birds.

A word list is given.

Blue Jay Woodpecker Nuthatch

Guess the names of these birds.

Put the right name into each box.

Example: 1. This bird cuts deep into wood. He cuts out insects that hurt the tree. He is a helper to the tree.

His name is _____

Put his name in this box.

(A box is drawn at the side of the page, for this purpose).

There are five of these related or similar comprehension exercises in this section.

Several exercises are based on word analysis ability.

Example:

short bill part under

long thin under tail

One of these words has the little word <u>in</u> inside itself.

Find that word.

Write it in the box.

Draw a line under that part that says <u>in</u>.

(Box provided for that purpose at the side of the page).

Another related exercise is this.

<u>Nuthatch</u>

There are two small words inside this word.

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His name is _____

Put his name in this box.

(A box is drawn at the side of the page, for this purpose).

There are five of these related or similar comprehension exercises in this section.

Several exercises are based on word analysis ability.

Example:

short hill part under

long thin under tail

One of these words has the little word in inside itself.

Find that word.

Write it in the box.

Draw a line under that part that says in.

(Box provided for that purpose at the side of the page).

Another related exercise is this.

Nuthatch

There are two small words inside this word.

Each small word has three letters.

Write one in each box.

upside down

right side up

One of these words has the sound ow, in the middle of itself.

Write that word here.

One word ends in the sound ight.

Write that word here. et. al.

Another form of the word analysis type exercise:

1. Word begins with s
2. Words begin with sm
3. Words begin with str etc.

These are the words.

Read them.

Put them in the right boxes.

stays small strong sticks

seen straight short etc.

Another word analysis exercise is this:

Here are some big words.

There are little words in the big words.

Draw a line around the little words.

(List of words taken from the preceding stories and exercises are used).

There are eight word analysis type exercises. Twelve exercises are related to art.

Each small word has three letters.

Write one in each box.

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Write that word here.

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There are eight word analysis type exercises. Twelve exercises are related to art.

An example of this art type exercise :

Feeding the Birds

Draw a picture of your yard.

Draw a bird feeding shelf.

Draw some suet hanging from a tree. Remember to draw a winter tree.

Draw some birds feeding.

Draw a woodpecker, a nuthatch, a chickadee, and a bluejay in your picture.

Put yourself in the picture.

You are bringing some food to the birds.

There are seven illustrations to be colored in this section of the workbook.

Before introducing the workbook exercises a Pre-test was given. In this test the children were encouraged to say just what they thought about any given question. The answers were recorded as they were spoken. No comment was made on any response.

To avoid repetition, similar answers were assimilated into one answer. The first Pre-test covered pages 1-8 in the workbook. The test was divided into two parts, and two thirty-minute periods were used. Thirty children were present on both days. Most children attempted some kind of a response to each question. On Question I. Three

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children did not answer. Question 8. Fourteen said they 'did not know'. Question 15. Seven did not answer.

Pre-Test

1. How do you think that birds live in winter ?

Some birds fly south.

Some find food.

Store food under logs.

Fly around.

Find food in trees.

Dig holes in trees and get in them.

Fly around and eat dried berries.

Find a place and sit in the corners of trees.

Fly around and pick up crumbs that fall from upstairs.

Go to a house and get food from a feeder.

People put out seeds.

Dig for worms.

Find a hole and live in it.

Live in evergreen trees.

2. Do birds fly south ?

Yes.

Some birds fly south.

Most birds fly south.

3. How long do you think it would take to make such a trip?

Start from up here and take about 10 hours.

Ten days and ten nights.

One or two days.

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3. How long do you think it would take to make such a trip?

Start from up here and take about 10 hours.

Ten days and ten nights.

One or two days.

3. (continued)

One week.

Two weeks.

Three weeks.

Ten days.

Ten weeks.

(Majority thought 2-10 days).

4. How many miles do you think they have to fly ?

Majority guessed 1-10 miles.

One said twenty miles.

One said 100 miles.

5. When do they fly -- day or night ?

Many believed that birds start out very early, about 3 or 4 A.M, and fly until 3 or 4 P.M. Others were of the opinion that birds start around 12 noon and fly until late at night.

6. Do you think the birds fly fast or slow ?

Majority believed the birds would fly fast 'so as to get there quick'.

Bird flies as fast as a bus.

Fast, but then they get tired and go slow.

Two children guessed that they flew slow.

7. On this trip do you think that the birds fly together or alone ?

Big groups (Majority answer)

Fly alone. (3 answers).

3. (continued)

One week.

Two weeks.

Three weeks.

Ten days.

Ten weeks.

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7. On this trip do you think that the birds fly together or alone ?

Big group (Majority answer)

Fly alone. (3 answers).

8. Do you know what the word 'migration' means ?

(Three children thought it was an expression of courtesy).

'When you're being extra polite and say 'my gracious!

How fast birds fly.

Means something about birds.

How birds store food.

About birds flying together.

9. Some birds are called land birds. What do you think this means ?

Stays on land most of the time.

Never flies but stays on the land.

Lands on the ocean.

Builds nest near the ocean.

Nests on land.

Might make a nest on a lighthouse.

Stays in trees most of the time.

Always on the ground.

Stays on the ground and flies around at night.

Builds a nest in a fence.

Nest in a hedge.

Lives near ocean and crawls on land.

Might mean birds in a cage.

10. Some birds are called water birds. What do you think this means ?

Stays up in the air and flies over water.

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10. Some birds are called water birds. What do you think this means ?

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10. (continued)

Flies up high in the air and jumps into the water.

Drinks a lot of water.

Catch fish.

Birds like pigeons, ducks, sea-gulls.

Penguins.

Birds that swim in the water.

---

11. How old are you ?

(7-8 years)

12. How old do you think that your Grandfather is ?

(30-90) (Majority guessed below 60 years).

13. Do you think that trees live longer than people ?

Yes, some older.

No (7)

14. What are the redwood trees ? Have you ever heard of them ?

No.

15. Thousands of years ago there were no people on the earth. Who do you think lived here ?

The Indians

God

Only trees

Woods with animals

Bears and trees

Jesus

10. (continued)

Flies up high in the air and jumps into the water.

Drinks a lot of water.

Catch fish.

Birds like pigeons, ducks, sea-gulls.

Penguins.

Birds that swim in the water.

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11. How old are you ?

(7-8 years)

12. How old do you think that your Grandfather is ?

(80-90) (Majority guessed below 80 years).

13. Do you think that trees live longer than people ?

Yes, some older.

No (7)

14. What are the redwood trees ? Have you ever heard of them ?

No.

15. Thousands of years ago there were no people on the earth.

Who do you think lived here ?

The Indians

God

Only trees

Woods with animals

Bears and trees

Lions

15. (continued)

Squirrels and bears.

Only water.

God.

Trees and little bears, squirrels and skunks.

Just animals and woods.

Trees.

Mountains and animals.

Whole world was water.

Whole world was just black.

The pre-tests were given as a test of the objectives of the subject and were given before educational activities were begun. Later, the same tests were used for diagnostic purposes.

Science workbook lessons were held in twenty-minute periods three days a week for seven weeks. (This seven-week period refers to the thirty-five page section used for this present analysis). In certain lessons where art work was part of the lesson development, a thirty-minute art period following the twenty-minute science program was utilized.

The workbook was so constructed that a short story preceded each set of exercises. The story was first scanned for vocabulary difficulties; a few words and phrases were put on the board, and a brief, intensive drill was used. Then the class opened the workbook to the story and a few

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minutes of silent reading study were employed. Following this the class was called to attention and the story was read orally.

In this first reading, those with the less adequate reading abilities were called on. Difficult words were "sounded out", and others helped where it was needed. Then the story was re-read (once or twice) by the best readers in the class, and the children were advised to "think hard" about the story because in a few minutes they would want to be able to answer some questions about the story.

After the story was read, a brief discussion period was held. Questions were answered and an informal check on comprehension was made. Then the class turned the page to the exercises. The directions were read orally. The children took their pencils and worked out the exercises to the best of their ability. No help was offered at this time. At the end of the writing activity, the children were allowed to color in some of the pictures. If an art period was to follow, directions for the picture were read and discussed.

At the end of the period, books were collected and checked. During the next science period, before the new lesson was begun, all exercises of the previous lesson were done orally, and discussion was encouraged.

CHAPTER IV

SUMMARY AND CONCLUSIONS

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The main purpose of this writing was to attempt to demonstrate through (a) a review of the literature, and (b) an examination of desirable outcomes in present-day living that a promulgation of a science program to begin at the earliest level and to continue through all levels of education is desirable.

An attempt has been made to show through a review of the literature that such a program should not be rigid, arbitrary, nor artificial. On the other hand, objectives and aims should be clear in the mind of the educator. These aims should represent a more or less continuous unfoldment from grade to grade. Thus, as the same principles may be taught again and again, greater development and enlightenment should occur.

While recognition is given to the various types of activities such as: discussion, experiment, excursions and reading, this study was limited to the development of a workbook and such activities as were utilized were developed around the workbook nucleus.

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The general aim of this workbook was its utilization through stories, exercises, and art to establish a small part

of the concept concerning the relationship of living things to the out-of-doors, weather and seasonal changes.

Particular emphasis was placed on the Autumn-Winter section which deals with the adjustments of birds, insects, plants and humans to their environment. Note was placed also on the Spring section which shows development and care of the young during the general growth period.

Although it was to be hoped that certain content items would be retained by the pupils, the purpose was not to force miscellaneous content items, but to establish some small realization of the relationships of animals, plants, etc., to their environment.

An associated aim of this study has been the hope that the evidence might show the high degree of interest and the motivation possible in the field of science education in the elementary school even with the very young child. And that science can be utilized as a tool for reading and its related subjects together with number work and the program of art. Thus, directed work in this field can be seen as a useful tool for the elementary school and not be considered 'an extra' in an already overburdened school curriculum.

There are many limitations to this study. The historical survey touches on the high points-- further elaboration is possible.

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The construction of the workbook is faulty in some places.

Certain exercises proved more beneficial than others. There are various sections that could be made more applicable. Data should be more specific, and there is need for more research.

The sharing of thoughts on subjects in the workbook seemed to awaken curiosity and interest. For example, one section of the workbook deals with the migration of birds and from pre-test questions and discussion much interest was evinced in both the abstractions of distance and of time.

It was known that some birds fly south during the winter months. The question was asked(as part of the pre-test), "How long do you think that it would take to make such a trip?" The majority thought two to ten days was the right answer. To the next question,"How many miles do you think they have to fly?" the majority guessed one to ten miles. One said, 'one hundred miles', and this answer caused much amusement among the others. (It is interesting to note that the boy who answered this had traveled to America from Europe when he was three years old and he has had many stories told to him about his relatives in Europe. Thus he had come to conceive distances a little more accurately than the majority).

From the talk ensuring from these questions the children were most anxious to find a correct answer. When the workbooks with the story section were passed out, attention was good and everyone made valiant efforts to understand the reading in order to find out something about the subject.

The pre-test and discussion serve as a warming up period. If workbooks had been passed out with no preliminary discussion, and the children merely told to 'read the story, "Birds Fly South"', interest and appreciation would have been much less than was the actual case.

When the children found out that birds fly many thousand miles, they were much excited. They were much interested in the statements that the Nighthawk flies seven thousand miles and water birds fly more than eight thousand miles, and that the bird champion of the migration flight is the Arctic Tern which flies 11,000 miles.

The children were much impressed by the comparison of their own guesses of one to ten miles with the actual figures. They were impressed to find that the 'one hundred mile guess' was 'nearest right'.

It would appear that the Pre-test and discussion had the value of :

1. Finding out where the children are in their thinking.
2. A guide to better instruction.
3. Development of critical thinking.
4. Development of interest and curiosity.
5. Establishment of good attitudes.
6. Development of a spirit of investigation.

One of the values of using a workbook of this sort seemed to be the possibility of tie-up between discussion interests

with story reading together with various comprehension check exercises. It helped to develop ability to read and to follow simple directions. Also, the tie-up of such instruction with the field of art and similar activity seemed to be of value.

Some of the exercises were clear and appeared to be readily usable. In other tests, there were certain confusions resulting from poor test construction. Some tests were too complex for the grade level or the statements were ambiguous and needed clearer wording.

The vocabulary exercise such as finding small words in big words, marking certain sounds in words, or analyzing words by putting certain word parts or 'sounds' into boxes seemed to have value. There was marked growth in accomplishment in this type of exercise as the number of errors showed a decrease of more than fifty per cent between the exercises done in the fall and similar exercises done in the spring.

The 'carry-over' into the regular reading could be seen by greater pupil effort and confidence in attempting to 'work out' word difficulties independently. Also, since the word list used in the workbook was similar to the reading vocabulary of the second grade, the word drill in the regular reading class was made somewhat easier.

There was close correlation between the science and the art program. There appeared to be enrichment carried from one field to the other. Observation of seasonal change, color variation and contrast was keen in the field of art. Study

of the seasonal effects on plants, animal and insect life provided science enrichment. Trees and bushes with their bare branches in winter, tiny buds in the spring, full green in the summer, and varied color in the autumn, were drawn again and again in the various seasonal pictures. There seemed to be much clear appreciation of seasonal and weather changes and of the effects upon all life of these changes at the completion of the workbook.

CHAPTER V

SUGGESTIONS FOR FURTHER RESEARCH

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Suggestions for further research might be:

1. A more complete survey of the aims and development of science in present-day society.

2. Greater emphasis on the part which the school must play in the enlightenment of the individual and his place in future democratic development.

3. Study and analysis of present-day curricula.

4. Study of the conflict between the method of science and the methods of authoritarianism.

5. Need for research study to determine the selection and the evaluation of objectives to be used in the elementary school.

6. Research to determine those objectives that will be of greatest benefit to the education of the layman.

7. Research to determine those objectives that most greatly influence the thought reactions of the individual.

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APPENDIX

APPENDIX

A Story About the Weather

There are four seasons in the year. Their names are winter, spring, summer and autumn.

In winter snow and ice cover the ground. It is cold. The trees are bare.

In the spring the weather begins to get warm. We plant seeds in our gardens. Trees have new green leaf buds.

In summer the days are hot. Plants grow in the garden. Sun and rain help them to grow. All the trees are covered with green leaves.

In autumn the weather begins to grow cool. We pick our plants from the garden. This is called the Harvest Time. Leaves are turning bright colors. Soon they will fall from the trees.

How do you dress in winter ?_____/ Draw your picture.
How do you dress in spring ?_____/ Draw your picture.
How do you dress in summer ?_____/ Draw your picture.
How do you dress in autumn ?_____/ Draw your picture.

PICTURES OF YOU

1. Winter

2. Spring

3. Summer

4. Autumn

A Story about Autumn

The Autumn months are September, October and November. Sometimes we call them the Fall months.

In Autumn all living things get ready for winter. Plants store food. In late autumn grass plants look dry and dead. But under the ground the roots are still alive. Next spring new grass will come up from the roots.

Many birds fly to the warm South. Some birds stay in the North.

Many insects and animals go to sleep in the winter. In Autumn they are busy storing away food and finding winter homes.

I. Draw a winter tree.

2. Draw a spring tree.

3. Draw a summer tree.

4. Draw an autumn tree.

3. Summer Tree

4. Autumn Tree

An Insect that Goes to Sleep

Jimmy brought a green caterpillar to school. The children put it in a glass jar. They put dried leaves into the jar. The caterpillar ate the leaves.

Next day the caterpillar began to spin. It rolled itself up in something that looked like soft, fine string. The fine string comes from inside the caterpillar's body. Soon the caterpillar was asleep inside his cocoon.

Nancy found a fuzzy brown and black caterpillar. The children called him Wooly Bear Caterpillar.

They put Wooly Bear into a glass jar. Soon Wooly Bear crawled inside a dry leaf. He pulled the two sides of the leaf together and went to sleep. This is Wooly Bear's cocoon.

Bob found the best thing. It was hard and brown. It hung from the end of a branch. He brought it to school. The teacher told the children it was a chrysalis.

The children wanted to know what was inside it. Bob said it would be a surprise.

A

The girl in this picture is Nancy.
Put an X on her.

Nancy has a fuzzy brown caterpillar on a leaf.
Put an O on the caterpillar.

The boy in the picture is Jimmy.
Put a V on him.

Jimmy is looking at a green caterpillar.
Put a ☐ on it.

Nancy and Jimmy took the caterpillars to school.
Where did the children put them ?
Draw a picture showing where the children put them.

Here are some big words.
In the big words are some little words.
Find the little words.

Draw a circle around the little words.

year	called	spin	fall	winter
snow	still	inside	began	plant
cold	north	branch	insects	together
begin	start	animals	tall	caterpillar

A−

There are four seasons in the year.
They are called winter, spring, summer and autumn.
Summer is warmer than winter.

Draw a line under the right words.

A

There are four seasons in the

yellow--year---yard

The name of one season is

swing---spill---spring

Summer is warmer than

water---window---winter

Some of these words have ing inside them.
Find the letters ing .
Put a line under ing .

Some of these words have er inside them.
Find the letters er .
Put a circle around er .

things	warmer	storing	living
winter	spinning	having	flying
helping	doing	finer	covered
cover	falling	cooler	coming
growing	greener	something	caterpillar
begining	calling	string	sleeping
picking	summer	softer	together

A

Read these words.

four	year	cold
winter	warmer	summer

A

Find the right word to fill in the ____ .

1. Winter is cold.
2. There are four seasons in the year.
3. Summer is WARMER than winter.
4. WINTER is cold.
5. There are four seasons in the YEAR.
6. SUMMER is warmer than winter.

Draw a line under the right word.

Nancy bought / brought a caterpillar to school.

Nancy carried the caterpillar to school on a left / leaf .

The children put the caterpillar in a grass / glass jar.

Some of these words have the little word all inside them.

Draw a line around each all .

called falling together
colors flying tall

Read this story

Autumn weather is bright and cool.
Trees have beautiful colored leaves.

Animals are busy storing food.

Insects are going to sleep.
Birds are flying south.

One day the children went for an autumn walk in the woods.

Draw this picture.

Joyce Lawrie

Joyce Marie Lavare

Plants Get Ready for Winter

Plants are living things.

They need food.

Plants store away food.

This food keeps them alive in winter.

Plants store their food in three places.

Some plants store food in their roots.

Some plants store food in their stems.

Some plants store a little food in their buds.

--

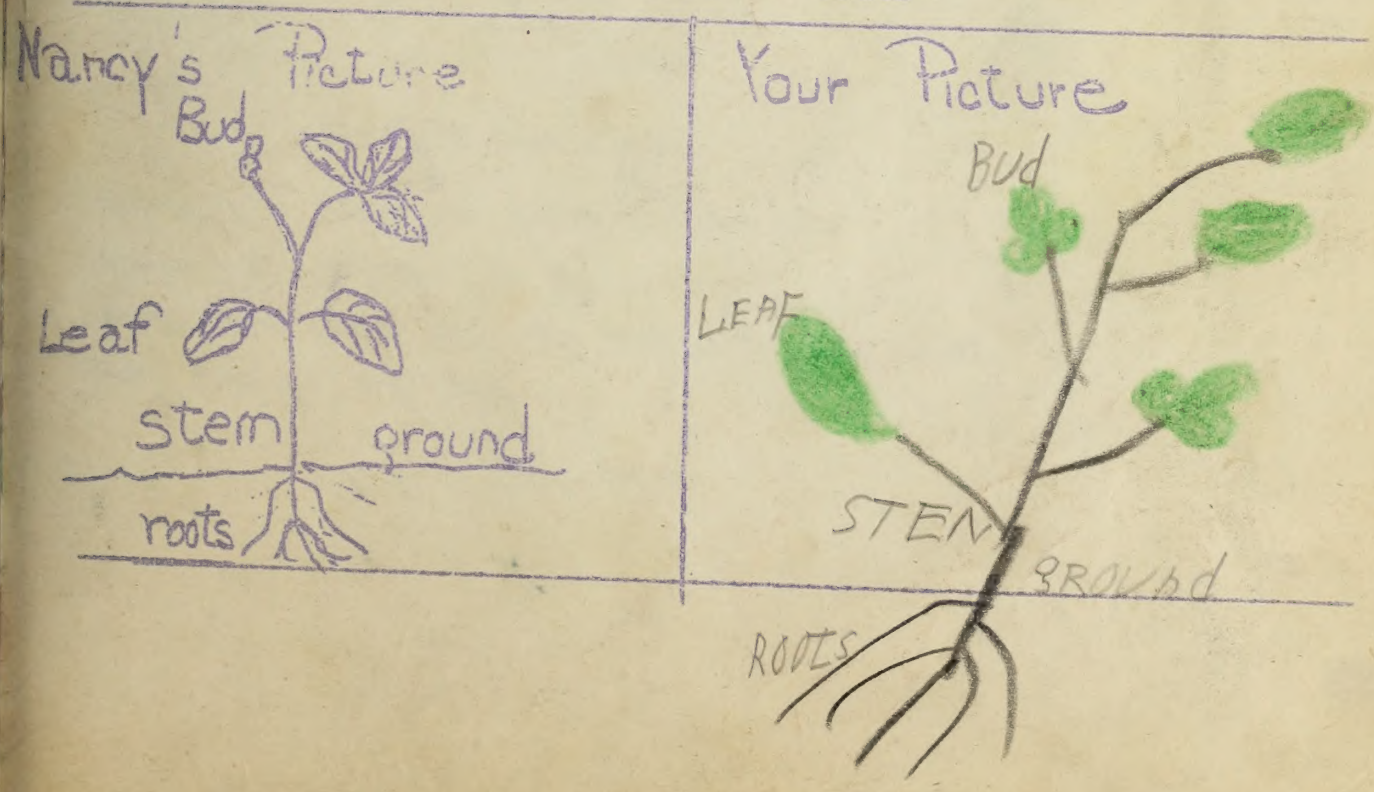
Nancy said she would like to draw a picture of a little plant. Here is the picture . Look at Nancy's picture.

You draw a picture of a plant.

Put these words where they belong on your picture.

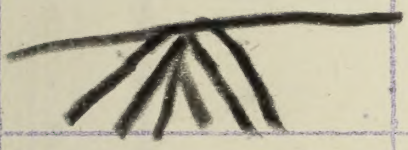
leaf buds

stem roots



Plants store their food in three places.

1. Draw a leaf.
2. Draw some roots.
3. Draw a flower.
4. Draw a stem.

1. A leaf	2. Some Roots	3. A flower	4. A stem
			

Think about a plant.

What do you call the part that is under the ground ? ROOTS

What do you call the part that grows above the ground ? STEM

What do you call the part that flowers and leaves come from? BUDS

A

The Root of a Plant

Roots of a plant are under the ground.
Roots hold the plant in the ground.
Roots take water from the ground for the plant.
Some roots store food.

Some Root Storehouses

In late fall and winter grass and weeds look dry and dead. But under the ground the roots are alive. They hold food and water. In the spring new stems and leaves will grow.

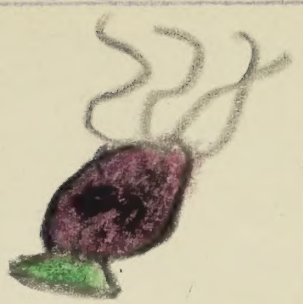
Some plants hold so much plant food in their roots that we like to eat them. The best root plants that we like to eat are: --carrots, beets, radishes and turnips.

Mother cooked some carrots.
Bob ate 2 carrots.
Nancy ate 3 carrots.
Jimmy ate 5 carrots.
How many carrots did the children eat ? 10

Mother cooked seven beets.
Bob ate 2 beets.
Nancy ate 3 beets.
Jimmy ate the rest of the beets.
How many did Jimmy eat ? 2

Each child ate 1 radish.
Mother ate 2 radishes.
How many did they eat ? 5

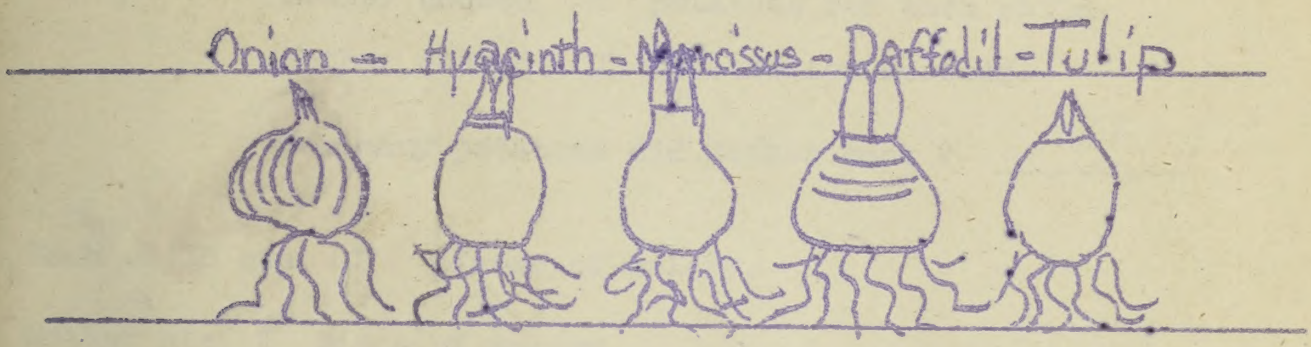
Draw a picture of a carrot .
Draw a picture of a radish.
Draw a picture of a beet.
Draw a picture of a turnip.

1. Carrot	2. Radish	3. Beet	4. Turnip
			

Draw a picture of mother cooking vegetables

The Stem of a Plant

The stem of a plant is where the leaves begin to grow.
Some stems are hard like the branch of a tree.
Some stems are not hard like the stem of a dandelion.
Some stems are long like stems of beans.
Some stems are small and fat like the stem of a lettuce plant.



Some Stem Storehouses

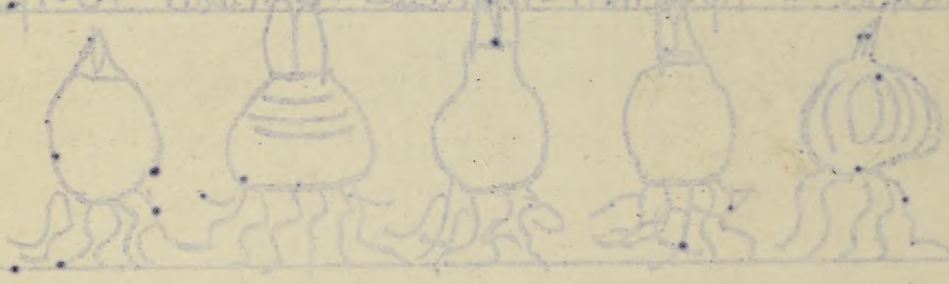
See the pictures of the bulbs.
Bulbs look like onions.
An onion is a bulb.

Most plants are planted in the ground.
Some bulbs grow in water.
Narcissus bulbs grow in water.

A bulb is a stem
Little white strings grow on the under part.
These are roots.
But these roots do not hold food.
The food is in the bulb or the stem.

Some plants hold so much food in their stems that we like to eat them. Some stem plants that we like to eat are :

Onions, celery and potatoes Potatoes are stems that grow under the ground.



Mother cooked some onions.

Bob ate 3 onions.
N
Nancy ate 4 onions.

Jimmy ate 2 onions.

Mother are I onion.

A

How many did they eat ? 10

Mother cooked 2 potatoes for each child.

Mother cooked . I potatoe for herself.

How many potatoes did Mother cook ? 7

Each child ate 3 pieces of celery.

Mother ate I piece of celery.

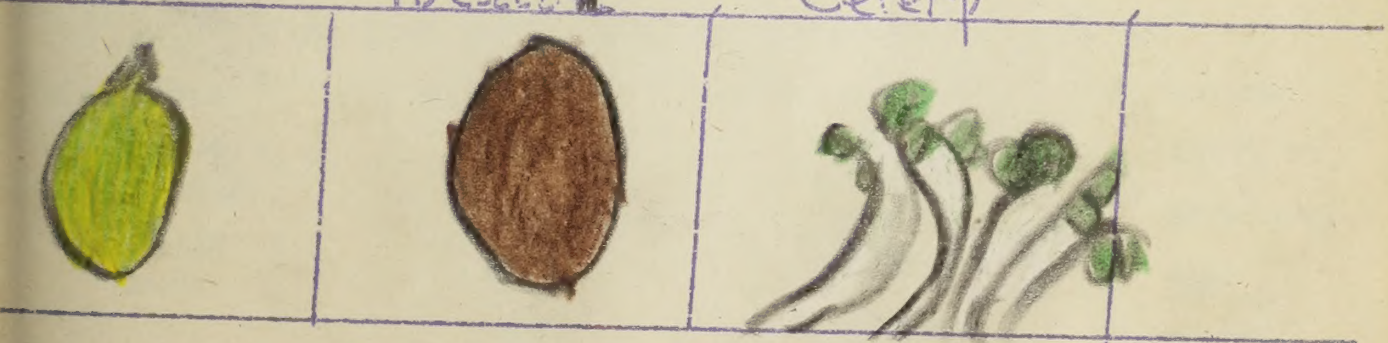
How many did they eat ? 10

Draw a picture of an onion.

Draw a picture of a potatoe.

Draw a picture of some celery.

Onion Potatoe Celery



A Story

Planting Narcissus Bulbs

The children brought some bulbs to school
They put the bulbs in a dish.
They put stones around the bulbs
They put water over the stones.
They put the dish in the dark.

Soon the stem began to grow.
Thin white roots grew down around the stones.
Tall green leaves grew from the stem.

The children put the bulbs near a window.
A bud grew on each stem.
Soon the buds began to open.
Inside were white flowers.
They were beautiful.

A

Here are some words. In each group of words there is one words that does not belong with the others.
Find that word. Draw a line under it.

1. roots
   stems
   leaves
   balls
   buds

2. carrots
   radishes
   turnips
   tables
   beets

3. winter
   spring
   green
   summer
   autumn

4. onions
   potatoes
   narcissus
   toys
   celery
   corn

Things to Know

Draw a line under the right word.

1. Carrots, turnips and radishes are called

violet vegetables velvet

A

2. Plants have

rooms roots rocks

3. Leaves grow from

bugs beds buds

4. Some buds make

flour flowers flies

5. Some buds make

lights leaves left

6. An onion is a

bed bulb blow

Draw a Picture of some Vegetables

Joyce

Some Bud Storehouses

Trees are our largest plants.
Small buds hold the leaves and flowers.
Leaves start to grow in the spring.
Leaves use the food stored in the buds.

In winter every tree has tiny buds on its branches.
These buds hold food for the tiny new leaves.
Look for them.

The bushes have tiny buds on their branches.
The buds hold new leaves and flowers.
Look for them.

Draw a winter tree.
Draw a winter lilac bush.
Draw a winter forsythia bush.

Trees are our largest plants.

Small buds hold the leaves and flowers.

Leaves start to grow in the spring.

Leaves use the food stored in the buds.

In winter every tree has tiny buds on its branches.

These buds hold food for the tiny new leaves.

Look for them.

The buds have tiny buds on their branches.

The buds hold new leaves and flowers.

Look for them.

Draw a winter tree.

Draw a winter lilac bush.

Draw a winter forsythia bush.

Food from Plants

All living things need plants for food.

People need plants for food.

Animals need plants for food.

Meat comes from animals.

But animals must have food from plants.

All living things must have food from plants.

Bread comes from plants.

Fruits and vegetables are parts of plants.

A

Read this story again.

Draw a line under plants every time you find it.

How many times did you find it ?

Write the number here

7

Draw a line around food everytime you find it.

How many times did you find it ?

Write the number here

5

Draw a line under the right words

All living things need plants for

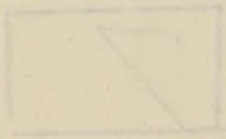
fruit food foot

Meat comes from

answer another animals

Bread comes from

plates plans plents

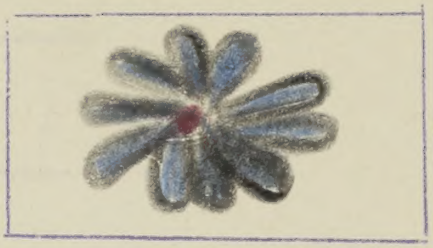


Parts of Plants that we Eat

A

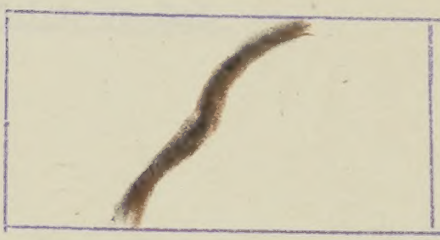
flowers roots seeds
stems leaves buds

Draw a flower here.
Draw just the flower part.



A flower

Draw a stem here.
Draw just the stem part.

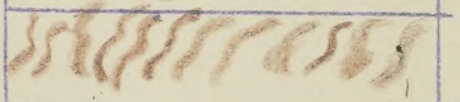


A stem

Draw a leaf here.
Draw just the leaf part.

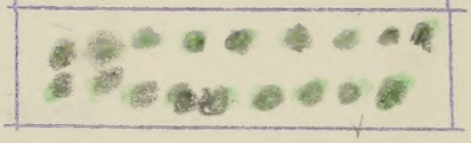
A leaf

Draw some roots.
Draw just the roots.



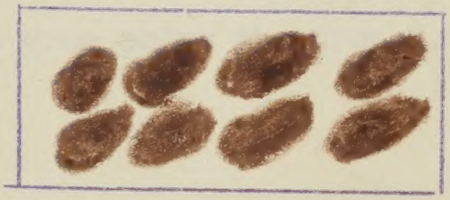
Roots

Draw some seeds.
Draw just the seeds.



Seeds

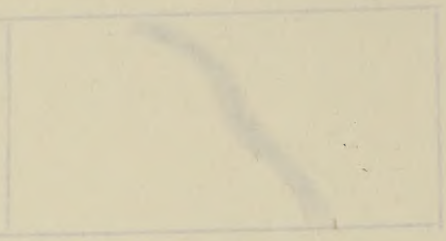
Draw some buds.
Draw just the buds.

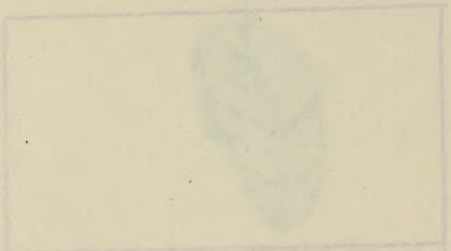


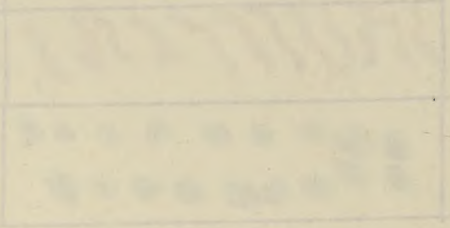
Buds

How many times can you find the word Draw ?
Write the number here 12

How many times can you find the word just ?
Write the number here 6







How many time can you find the word some ?

Write the number here _____.

How many times can you find the word here ?

Write the number here _____

Plant Food Which We Eat

SEEDS

which we eat.

Peas Corn Beans

Flour is made from the seeds of wheat.

STEMS

which we eat.

Onions Celery Potatoes

Potatoes are stems which grow under the ground.

Bulbs are stems.

Onions are bulbs.

ROOTS

which we eat

Turnips Beets Radishes Carrots

LEAVES

which we eat

Beet Lettuce Spinach

Dandelion Cabbage

FLOWERS and BUDS

which we eat

Asparagus Cauliflower

We eat the buds of asparagus.

Cauliflower is the flower of the plant.

Go on a visit to the Grocery Store.

Find all these vegetables which we eat

Draw a picture of the Grocery Store.

Show all these vegetables.

Draw a line under the word which every time you can find it.

Plant Food for Animals

Animals and birds eat plant foods just as they grow.

Animals know which plants are best from them.

M ost animals do not eat plant foods which would hurt them.

Draw a line under the words which belong to each picture.

A

The rabbit eats letters.

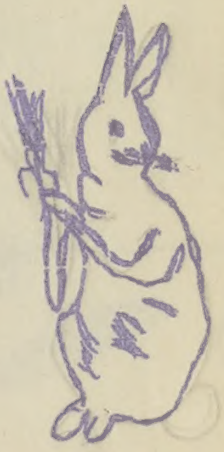
The rabbit eats lettuce.

The squirrel eats nuts.

The squirrel eats nails.

The bird eats the worm.

The bird eats the wool.



The rabbit eats cocoons.

The rabbit eats carrots.

Read this story.

Some parts of the story are right.

Some parts of the story are not right.

Put a C beside the parts that are right.

Put a X beside the parts that are not right.

The rabbit eats letters.

The rabbit eats lettuce.

The squirrel eats nuts.

The squirrel eats nails.

The bird eats the worm.

The bird eats the wool.

The rabbit eats cocoons.

The rabbit eats carrots.

Read this story.

Some parts of the story are right.

Some parts of the story are not right.

Put a C beside the parts that are right.

Put a X beside the parts that are not right.

Animals and birds do not eat plants. X

Animals and birds cook plant foods. X

Animals and birds eat plant foods just as they grow. C

Animals do not know which plants are best for them. C

Plant Food for People

People eat plant food in two ways.

People cook some plants.

People eat some plants that are not cooked,

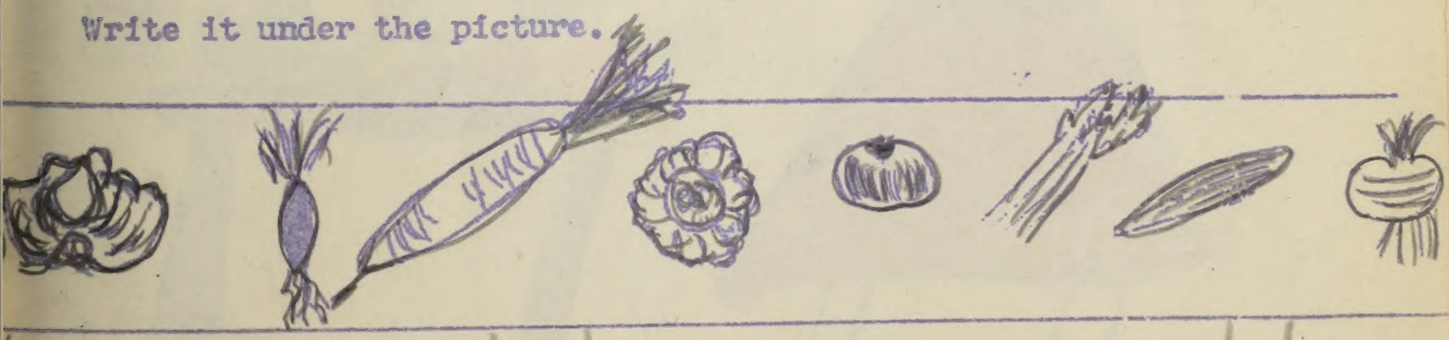
Here are the names of the plants that we do not always cook.

lettuce	carrots	cucumbers
celery	cabbage	onions
radishes	tomatoes	

Here are the pictures of these plants.

Find the plant name that belongs under the plant picture.

Write it under the picture.



1. LETTUCE 2. RADISHES 3. CARROTS 4. CABBAGE
5. TOMATOES 6. CELERY 7. CUCUMBERS 8. ONIONS

Animals and birds do not eat plants. _____

Animals and birds cook plant foods. _____

Animals and birds eat plant foods just as they grow. _____

Animals do not know which plants are best for them. _____

Plant Food for People

People eat plant food in two ways.

People cook some plants.

People eat some plants that are not cooked.

Here are the names of the plants that we do not always cook.

lettuce	carrots	cucumbers
celery	cabbage	onions
radishes	tomatoes	

Here are the pictures of these plants.

Find the plant name that belongs under the plant picture.

Write it under the picture.

These are plants which we do not always cook.

Mother knows these plants are good for you.

Sometimes she puts these plants together.

She calls it a salad .

You should eat a salad every day.

Ask Mother to make you a salad.

Here is a table.

Mother is making a salad.

The plants for the salad are on the table.

Draw the plants on the table.

Draw Mother .

Find the names for the plants which you draw.

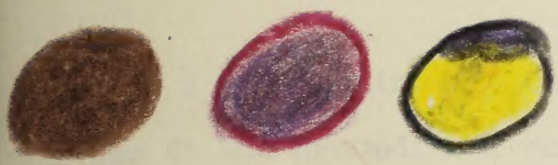
Write the names.

We cook many plant foods before we eat them.

Here are some of the plants which we cook.

potatoes	squash	cauliflower
beets	spinach	asparagus
turnips	cabbage	onions

Draw as many of these vegetables as you can.



Here are some big words.

In the big words are some little words.

Find the little words.

Draw a circle around the little words.

A

plants	away	winter	store
Nancy	she	little	these
belong	think	call	that
ground	hold	water	late
fall	spring	will	many
begin	branch	small	fat
onions	potato	bed	vegetable

We cook many plant foods before we eat them.

Here are some of the plants which we cook.

potatoes	squash	cauliflower
beets	spinach	asparagus
turnips	cabbage	onions

Draw as many of these vegetables as you can.

This is a game.

I am thinking of something that begins with the letter s .
It is very small. We plant it in the ground in the spring.

Draw a line under the right word.

said	salad
seem	seed

A

I am thinking of something that begins with the letter p
It grows in the ground. We eat one every day for dinner.

Draw a line under the right word.

pancake	potato
porridge	picture

I am thinking of something that begins with the letter c .
It is long. The color is orange. We eat it.

cabbage	cauliflower
carrot	celery

I am thinking of something that begins with the letter b.
It is little. We see it on trees and bushes in the winter. New leaves and flowers come from it.

bug	bed
bud	bush

I am thinking of something that begins with the letter s.
It is very small. We plant it in the ground in the spring.

Draw a line under the right word.

seed	salad
cream	seed

I am thinking of something that begins with the letter p.
It grows in the ground. We eat one every day for dinner.

Draw a line under the right word.

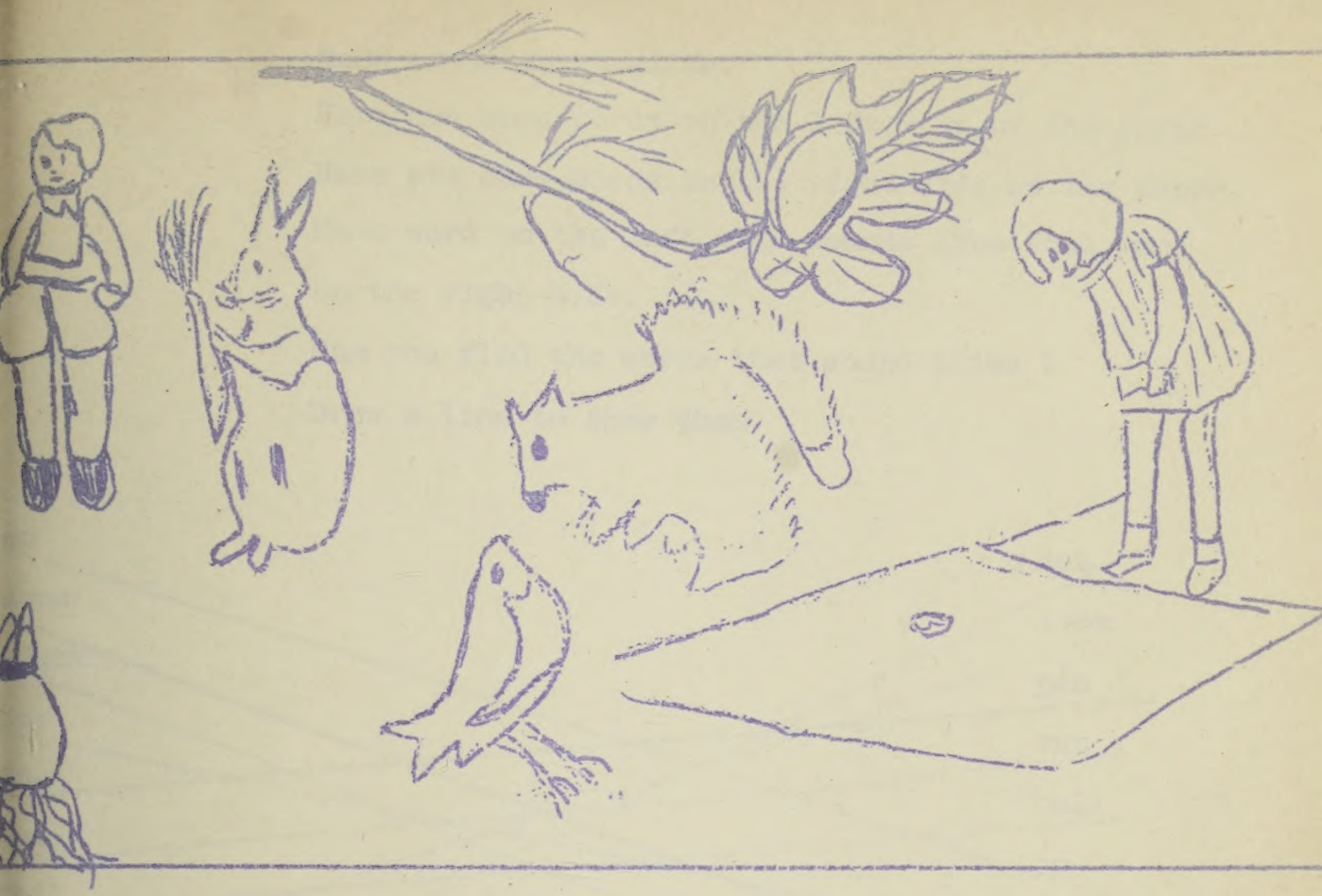
pancake	potato
porridge	picture

I am thinking of something that begins with the letter c.
It is long. The color is orange. We eat it.

cabbage	cauliflower
carrot	celery

I am thinking of something that begins with the letter b.
It is little. We see it on trees and bushes in the winter. New
leaves and flowers come from it.

bud	bug
bird	bush



Here is a picture.

What do you see ?

Here are some words.

Some of these words are in the picture.

Can you find them ?

Draw a line under the things you see.

chipmunk	ball	kitten	girl	cat
rabbit	carrot	cocoon	water	squirrel
mouse	box	hat	bulb	caterpillar
boy	branch	leaf	bird	dog

Here is a picture.

What do you see ?

Here are some words.

Some of these words are in the picture.

Can you find them ?

Draw a line under the things you see.

chipmunk	ball	kitten	girl	cat
rabbit	carrot	cocoon	water	squirrel
mouse	box	hat	bulb	caterpillar
boy	branch	leaf	bird	dog

Some words sound alike.

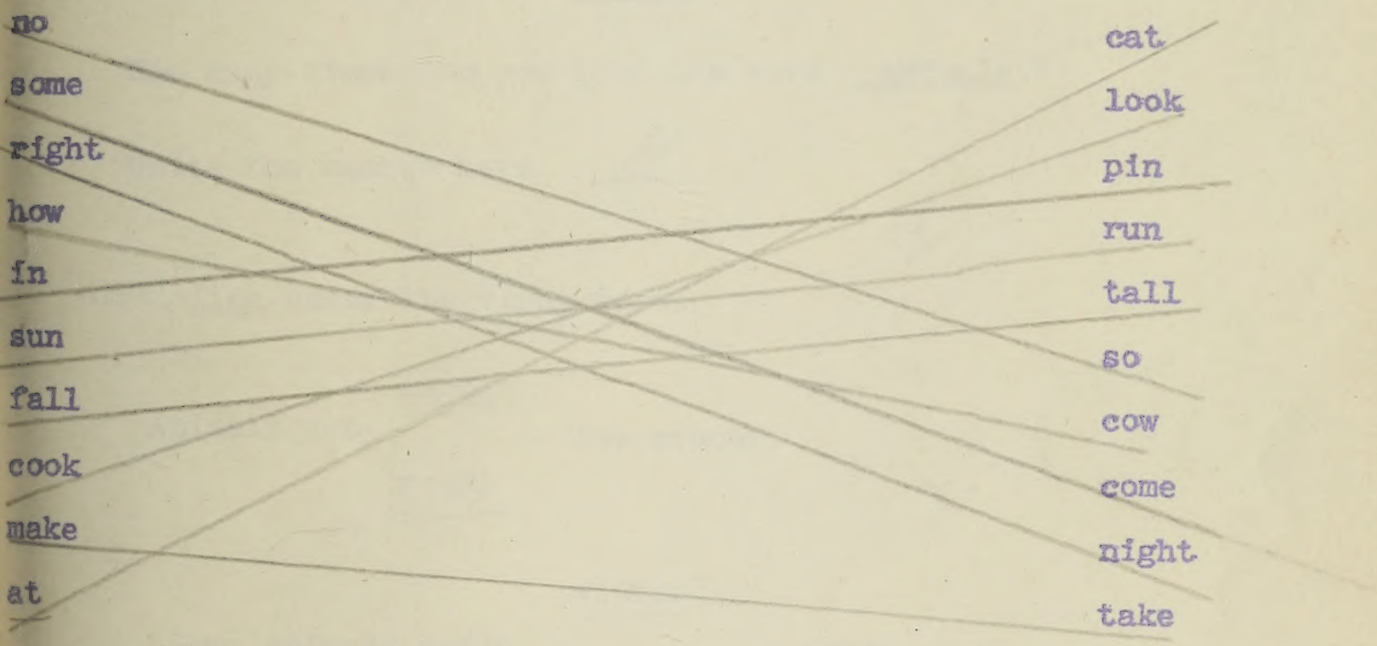
Here are some words on the left side of the papar .

Here are some words on the right side of the paper.

Each word on the left side sounds like some word on the right side.

Can you find the words that sound alike ?

Draw a line to show them.



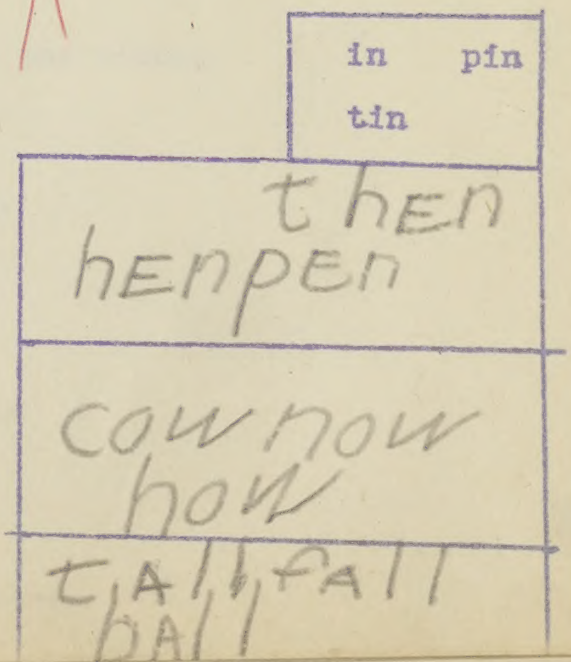
Here is a family.

The words sound alike.

Can you find any other family?

Write each family in a box.

hen	then	fall
cow	tall	pen
ball	now	how



Here are some words on the left side of the paper.
Here are some words on the right side of the paper.
Each word on the left side sounds like some word
on the right side.
Can you find the words that sound alike ?
Draw a line to show them.

cat	
look	
pin	
run	
tall	
go	
cow	
come	
night	
take	

Here is a family.
The words sound alike.
Can you find any other family?
Write each family in a box.

ben	then	fall
cow	tall	pen
ball	now	bow

in	pin
tin	

Animals get Ready for Winter

Some animals build winter homes.

Some animals go to sleep for the winter.

Some animals store away food for the winter.

Some animals hunt for food all winter.

How many times can you find the word some ?

Write the number here 4

How many times can you find the word animals ?

Write the number here 4

A

Put a line under the right word.

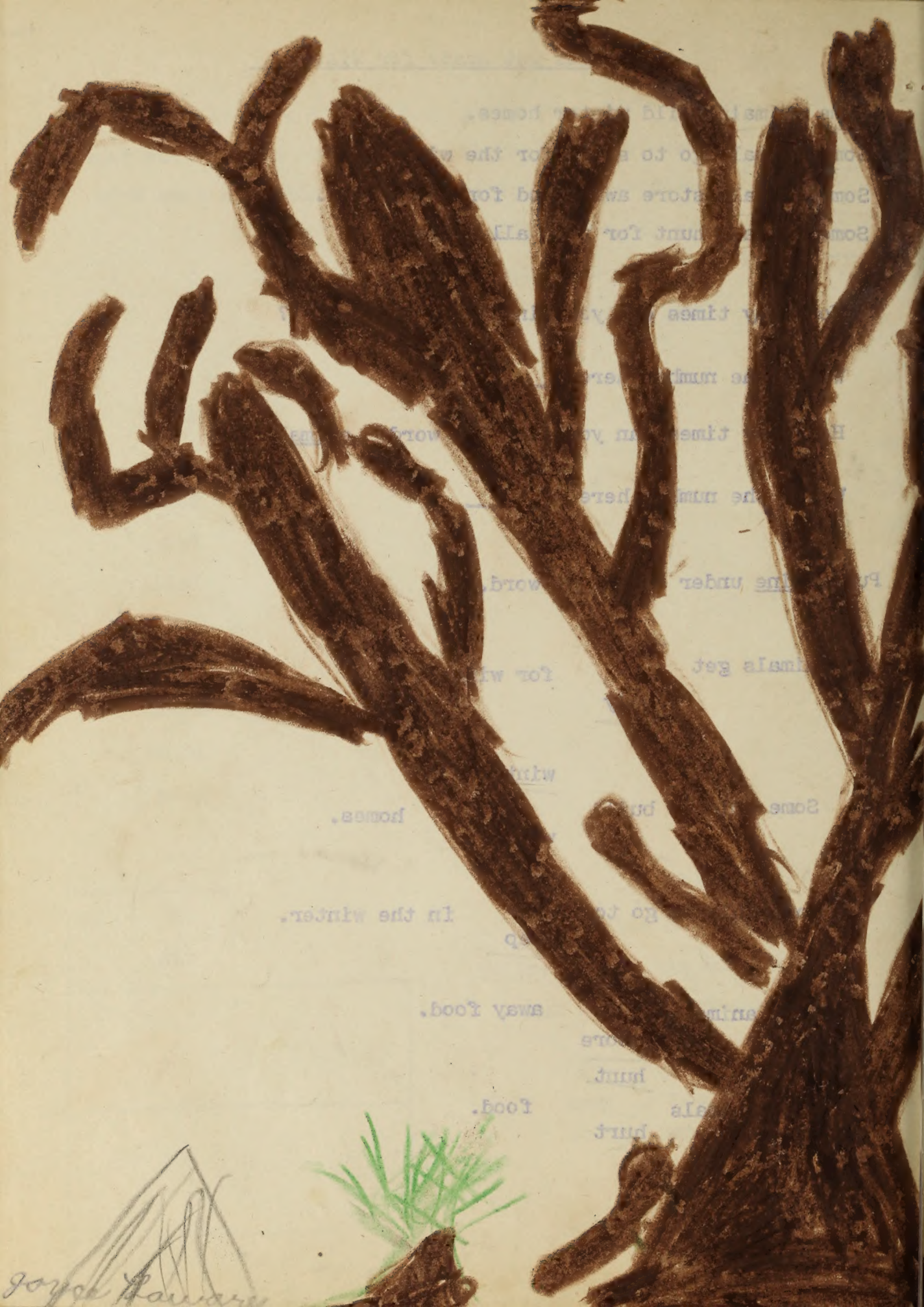
Animals get right / ready for winter.

Some animals build winter / window homes.

Some animals go to sled / sleep in the winter.

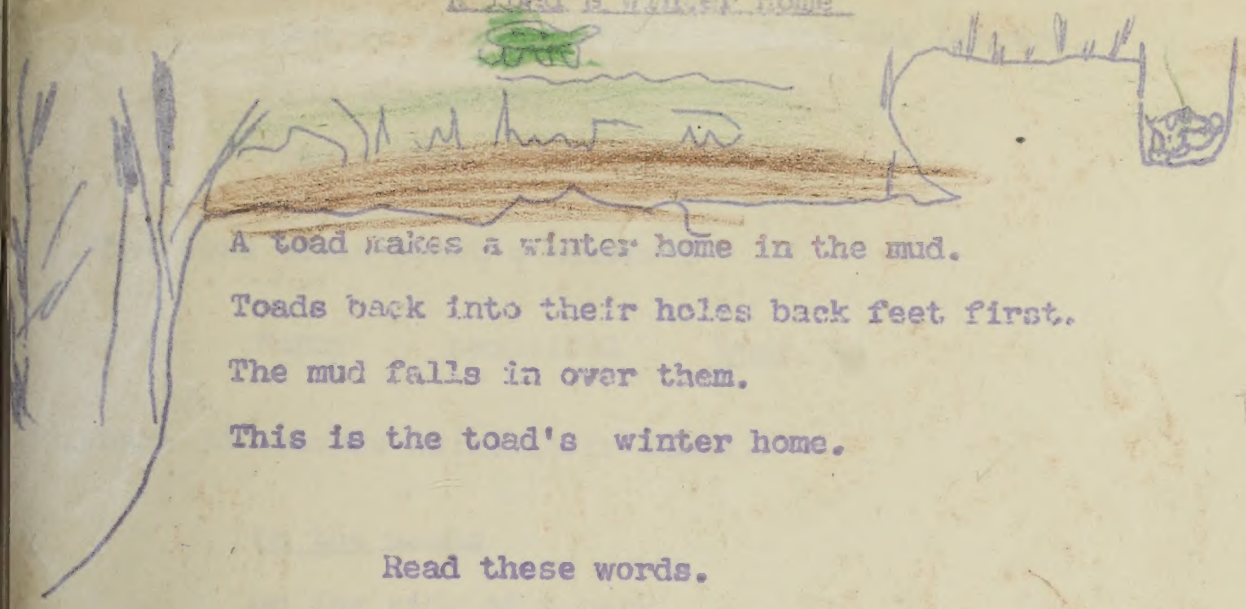
Some animals story / store away food.

Some animals hunt / hurt food.



Ronald

A Toad's Winter Home



A toad makes a winter home in the mud.
Toads back into their holes back feet first.
The mud falls in over them.
This is the toad's winter home.

Read these words.
Find the word that belongs in each blank.

holes back
mud winter

A toad makes a winter home in the MUd. A

Toads BACK into their holes ~~BACK~~ feet first.

The MUD falls in over them.

This is the toad's WINTER home.

A Beaver's Winter Home

Beavers build fine homes.
Their houses are often on the side of a bank.
Tunnels go into the water.
~~Sometimes that find food in the water.~~
Sometimes they find food in the water.
Food is stored in the room above the water.
Beavers are very busy animals.

A toad makes a winter home in the mud.

Toads back into their holes back feet first.

The mud fells in over them.

This is the toad's winter home.

Read these words.

Find the word that belongs in each blank.

holes back

mud winter

A toad makes a winter home in the _____.

Toads _____into their holes _____ feet first.

The _____ fells in over them.

This is the toad's _____ home.

A Beaver's Winter Home

Beavers build fine homes.

Their houses are often on the side of a bank.

Tunnels go into the water.

Sometimes that find food in the water.

Sometimes they find food in the water.

Food is stored in the room above the water.

Some of these words tell about the beavers.

Find the words.

Draw a line under the right word.

1. What word tells about a beaver ?

funny beautiful busy

2. Where do beavers build their homes ?

in the woods

on the side of a bank

in the snow

3. Beavers build (fire / fine) homes.

4. Their homes keep them (safe / soft) from cold and snow.

Some of these words tell about the beavers.

Find the words.

Draw a line under the right word.

1.What word tells about a beaver ?

funny beautiful busy

2.Where do beavers build their homes ?

in the woods

on the side of a bank

in the snow

fire

3.Beavers build homes.

time

safe

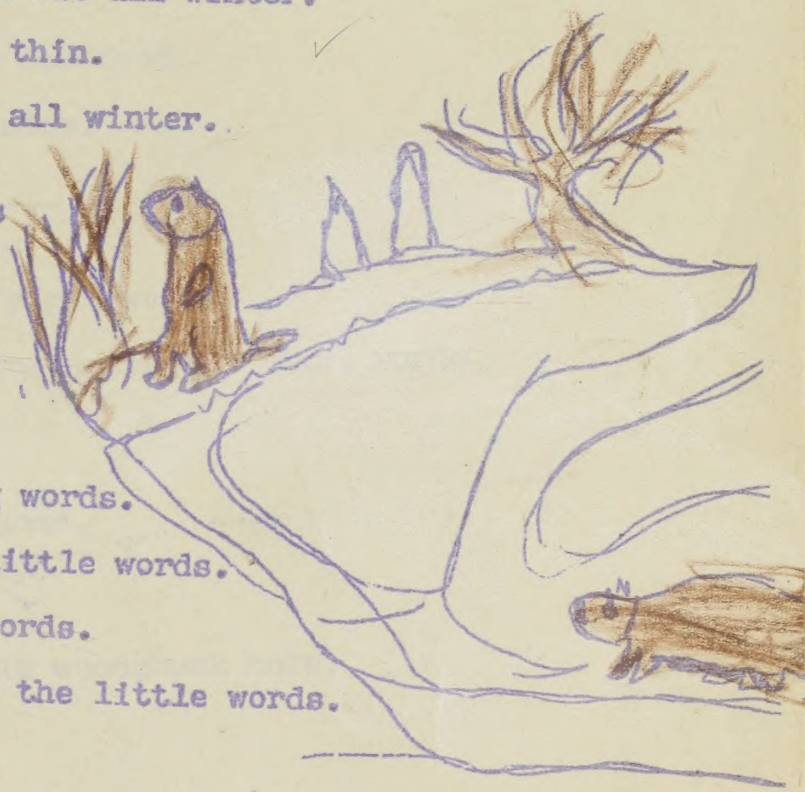
4.Their homes keep them from cold and snow.

soft

A Woodchuck's Winter Home

A woodchuck has a good home under the ground.
One room is large.
He sleeps here.
The room has a tunnel to the front door.
There are many tunnels to the back doors.
Woodchucks live on their own fat all winter.
In the spring they are very thin.
Many animals live like this all winter.
Some of them are :

woodchucks
badgers
raccoon
bears



Here are some big words.
Inside are some little words.
Find the little words.
Draw a line under the little words.

woodchuck	spring	toad
has	will	beaver
many	thin	into
fat	animals	sometimes
winter	badgers	along

A

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Here are some big words.

Inside are some little words.

Find the little words.

Draw a line under the little words.

woodchuck	spring	toad
has	will	beaver
many	thin	into
fat	animals	sometimes
winter	badgers	along

A Skunk's Winter Home

Skunks do not make a new home.

They use an old home.

Sometimes they use an old woodchuck home.

Sometimes they find a warm place under a barn.

Sometimes they find a warm place under the roots of a tree.

They take long naps.

Some warm days they come out for food.

They eat seeds, berries and mice.

Find the right words.

Draw a line under the right words.

A

Skunks do not make a ~~new~~ / now home.

Sometimes they us / use an old woodchuck hole.

Sometimes they find a warm / worm place under a barn.

Sometimes they find a place under a tree roof / root "

They talk / take long naps.

They eat seeds / seems barrels / berries nice / mice

Skunks do not make a new home.

They use an old home.

Sometimes they use an old woodchuck home.

Sometimes they find a warm place under a barn.

Sometimes they find a warm place under the roots of a tree.

They take long naps.

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They eat seeds, berries and mice.

Find the right words.

Draw a line under the right words.

Skunks do not make a new / now home.

Sometimes they use / us an old woodchuck hole.

Sometimes they find a warm / worm place under a barn.

Sometimes they find a place under a tree root / roof

They take / talk long naps.

They eat seeds / seems berries / berries mice / mice

A Chipmunk's Winter Home

The chipmunk makes a fine house under the ground.
It has long tunnels.
It has two rooms.
One room is a sleeping room.
One room is for storing food.

The chipmunk does not sleep all winter.
He takes long naps.
On warm days he wakes up.
He eats the food he has stored in his house.

Chipmunks store they food in the autumn.
Chipmunks have little pockets in their cheeks.
They carry food in these pockets.

These are capital letters.
Can you put them in the right places.

I T O A

1. The chipmunk's house is under the ground.
2. It has long tunnels.
3. There are two rooms.
4. One room is a sleeping room.
5. He takes long naps.
6. On warm days he wakes up.

The chipmunk makes a fine house under the ground.

It has long tunnels.

It has two rooms.

One room is a sleeping room.

One room is for storing food.

The chipmunk does not sleep all winter.

He takes long naps.

On warm days he wakes up.

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Can you put them in the right places.

i y o p

---

1. ___he chipmunk's house is under the ground.

2. ___t has long tunnels.

3. ___here are two rooms.

4. ___ne room is a sleeping room.

5. ___e takes long naps.

6. ___n warm days he wakes up.

Some animals live any way that they can.
These animals do not make winter homes.
They do not store food.
They do not sleep all winter.
They hunt for food all winter.
Their winter coats grow thick and warm.

Here are some big words.
Find the little words in the big words.
Draw a line around the little words.

A

animals	any	that
can	these	not
winter	store	for

The Rabbit

A rabbit has long ears and a short tail.
Rabbits do not make winter homes.
They just sit down in a place that looks safe.
Snow often covers them.
This does not hurt them.
They hunt for food.
They eat dry grass.
They eat winter seeds.
They eat the bark of trees.
They must be very careful.
Many big animals would like to have them for food.

Many big animals would like to have them for food.
They must be very careful.
They eat the bark of trees.
They eat winter seeds.

They eat dry grass.

They hunt for food.

Thia does not hurt them.

Snow often covers them.

They just sit down in a place that looks safe.

Rabbits do not make winter homes.

A rabbit has long ears and a short tail.

The Rabbit

---

animals	any	that
can	these	not
winter	store	for

Here are some big words.

Find the little words in the big words.

Draw a line around the little words.

These animals do not make winter homes.

They do not store food.

They do not sleep all winter.

They hunt for food all winter.

Their winter coats grow thick and warm.

D.

A Squirrel's Winter Home

Squirrels hide in many places.
Some squirrels sleep in the top of people's houses.
Some sleep in bird houses.
Some take naps under the roots of trees.

Squirrels hunt food in winter.
They find acorns.
They eat seeds .
They take the farmer's grain.

Squirrels store food in the autumn.
They hide their food in trees.
They hide it in the ground.
On cold winter days they find it and eat it.

Red squirrels like the cones of evergreen trees.
They live near these trees.

Squirrels have little pockets in their cheek.
They carry food in these pockets.
Squirrels are bigger than chipmunks.
A chipmunk has a stripe on his back.
Some squirrels are gray.
Some squirrels are red.

This is a red squirre

Some squirrels are red.

Some squirrels are gray.

A chipmunk has a stripe on his back.

Squirrels are bigger than chipmunks.

They carry food in these pockets.

Squirrels have little pockets in their cheek.

They live near these trees.

Red squirrels like the cones of evergreen trees.

On cold winter days they find it and eat it.

They hide it in the ground.

They hide their food in trees.

Squirrels store food in the autumn.

They take the farmer's grain.

They eat seeds .

They find acorns.

Squirrels hunt food in winter.

Some take naps under the roots of trees.

Some sleep in bird houses.

Some squirrels sleep in the top of people's houses.

Squirrels hide in many places.

This is a red squirrel

Study these words.

Write each word in the place where it belongs.

rabbits	ears	tail
safe	snow	hurt
hunt	eat	bark
careful	big	short

A

1. A rabbit has long EARS.
2. Rabbits must be very CAREFUL.
3. RABBITS do not make winter homes.
4. Rabbits HUNT for food.
5. Rabbits Eat dry grass.
6. Rabbits sit down in a place that looks SAFE.
7. SNOW often covers them.
8. Snow does not HURT them.
9. Rabbits eat the BARK of trees.
10. A rabbit has a Short tail.
11. Many BIG animals would like to have them for food.
12. A rabbit has a short TAIL.

Study these words.

Write each word in the place where it belongs.

rabbits	ears	tail
eats	snow	hurt
hunt	eat	bark
careful	big	short

1. A rabbit has long _____.

2. Rabbits must be very _____.

3. _____ do not make winter homes.

4. Rabbits _____ for food.

5. Rabbits _____ dry grass.

6. Rabbits sit down in a place that looks _____.

7. _____ often covers them.

8. Snow does not _____ them.

9. Rabbits eat the _____ of trees.

10. A rabbit has a _____ tail.

11. Many _____ animals would like to have them for food.

12. A rabbit has a short _____.

My coat is made of soft fur.
I have long ears.
I have a short tail.
What am I ?
Draw me.

My fur coat has a stripe
down the back.
I am smaller than a squirrel.
What am I ?
Draw me.

My fur coat is black.
There are white stripes on my coat.
I eat seeds, berries and mice.
What am I ?
Draw me.

My fur coat is gray.
My tail is big and bushy.
I like to eat nuts.
What am I ?
Draw me.

Deer in Winter

Deer do not make winter homes.

They rest in warm places.

They hunt for food.

They eat moss.

They push away the snow with their feet.

Sometimes they find grass.

They eat trees that are small.

They eat bark.

They eat twigs.

They make paths in the snow.

They keep these paths open all winter.

Many deer push away snow to make a round place like a floor.

They do this with their feet.

The moss and grass are ready to eat.

Here are some capital letters

Can you find where they belong ?

T D I M

A

1. Deer do not make a winter home.

2. They rest in warm places.

3. They push away snow with their feet.

4. Sometimes they find grass.

5. Many deer push away snow to make a round place like a floor.

6. The moss and grass are ready to eat.

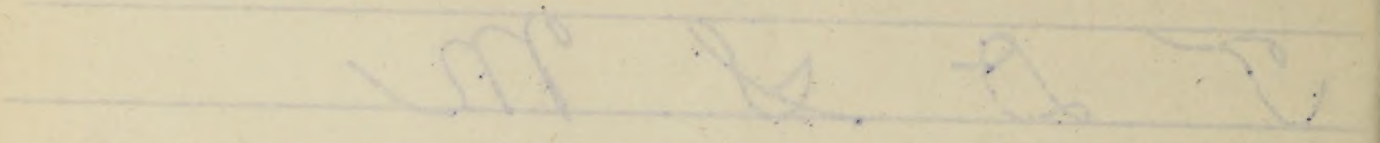
Here are some big words.

Find some little words in the big words.

Draw a line under the little words.

A

not	winter	they
for	eat	away
snow	with	the
find	find	sometimes
small	paths	these
open	many	push



1. ___eer do not make a winter home.

2. ___hey rest in warm places.

3. ___hey push away snow with their feet.

4. ___ometimes they find grass.

5. ___ay deer push away snow to make a round place like a floor.

6. ___he moss and grass are ready to eat.

Here are some big words.

Find some little words in the big words.

Draw a line under the little words.

not	winter	they
for	eat	away
snow	with	the
find	find	sometimes
small	rights	these
open	many	small

Wolves and Foxes

Wolves and foxes do not store away food.
They run about all winter.
They kill other small animals for food.
They are strong.
They kill and eat many animals.

Read these words.
Write them where they belong.

wolves	foxes	store
run	kill	food
strong	eat	

1. WOLVES and FOXES do not store away food.

2. Wolves and foxes are very STRONG.

3. They RUN about all winter.

4. They do not STORE away food.

5. They KILL and EAT many animals.

6. Wolves and foxes do not store away FOOD.

How Birds Live in Winter

Many cannot live in the cold North in the winter.
These birds fly to the warm South.
In the Fall we can see many birds flying together.
They are going to homes in the South.

Most of the summer birds fly to the South.
We can see robins, bluebirds, wrens and swallows.
These birds have to fly for many miles.
The trip takes a long time.
Some birds fly by day.
Most birds fly by night.
They cannot fly very fast.
They must rest.
They must find food.

We call this long flying trip a MIGRATION .

YES and NO

All birds live in the North all winter. ----------

Some birds fly to the South. ----------

The North is warmer than the South. ----------

All birds fly to the South. ----------

Robins live in the North all winter. ----------

The flying trip from the North
to the South is long and hard. ----------

Some birds fly by day. ----------

Most birds fly by night. ----------

The birds fly very fast. ----------

The long trip is called a MIGRATION. ----------

Here are big words.

There are little words in the big words.

Draw a line around the little words.

many	warm	these	cannot	swallows	together
can	fall	flying	for	cannot	winter
cold	not	North	must	call	robin

YES and NO

All birds live in the North all winter. _____

Some birds fly to the South. _____

The North is warmer than the South. _____

All birds fly to the South. _____

Nobins live in the North all winter. _____

The flying trip from the North
to the South is long and hard. _____

Some birds fly by day. _____

Most birds fly by night. _____

The birds fly very fast. _____

The long trip is called a MIGRATION. _____

Here are big words.

There are little words in the big words.

Draw a line around the little words.

many	warm	these	cannot	swallows
can	fall	flying	for	cannot
cold	not	North	must	call

Draw an Autumn Picture.

Draw a hill in the picture.

You and your friends are standing on the hill.

You are watching the birds flying South.

Draw an Autumn tree in the picture.

Drew an Autumn Picture.

Drew a hill in the picture.-

You and your friends are standing on the hill.

You are watching the birds flying South.

Drew an Autumn tree in the picture.

Some Big Numbers

Some birds have longer MIGRATION trips than other birds.
Birds that live on the land are called land birds.
The land bird that takes the longest MIGRATION trip
is the Nighthawk.
This bird flies 7,000 miles.

Birds that live on the water are called water birds.
Water birds take longer trips than land birds.
Many water birds fly more than 8,000 miles.

The Arctic Tern takes the longest trip of all birds.
This birds flies over 11,000 miles.

Think about these numbers.

Here is a small number-- 7

This number is bigger than 7 . It is 70 .

This number is bigger than 70 . It is 700 .

This number is bigger than 700. It is 7000.

The small number is 7
The big number is 70
The bigger number is 700
The biggest number is 7000.

Some birds fly many, many miles.

migration	water
Nighthawk	II,000 miles.
8,000 miles	7,000 miles

Some birds take longer _____trips than other birds.

The land bird that takes the longest migration trip is the_____

The Nighthawk flies _____ miles.

_____birds take longer trips than land birds.

Water birds fly more than _____miles.

The Arctic Tern flies over _____miles.

YES or NO

7 birds is more than 70 birds. _____

70 birds is more than 700 birds. _____

7000 birds is more than 700 birds. _____

80 birds is more than 8 birds. _____

8600 birds is more than 80 birds. _____

8 birds is more than 800 birds. _____

More about Numbers

You are 7 years old.

Your Grandfather is 70 years old.

There are no people 700 years old.

But many trees are 700 years old.

There were not many people in the world 7000 years ago.

Large animals lived in the world.

YES or NO

70 is more than 7 but not as much as 700. ----------

700 is more than 7 but not as much as 7000. ----------

7 is more than 70 but not as much as 700. ----------

7 is more than 70. ----------

70 is more than 700 ----------.

7000 is more than 700 ----------

700 is more than 70 ***----------

You are 7 years old.

Your Grandfather is 70 years old.

There are no people 700 years old.

But many trees are 700 years old.

There were not many people in the world 7000 years ago.

Large animals lived in the world.

Yes or No

70 is more than 7 but not as much as 700. _____

700 is more than 7 but not as much as 7000. _____

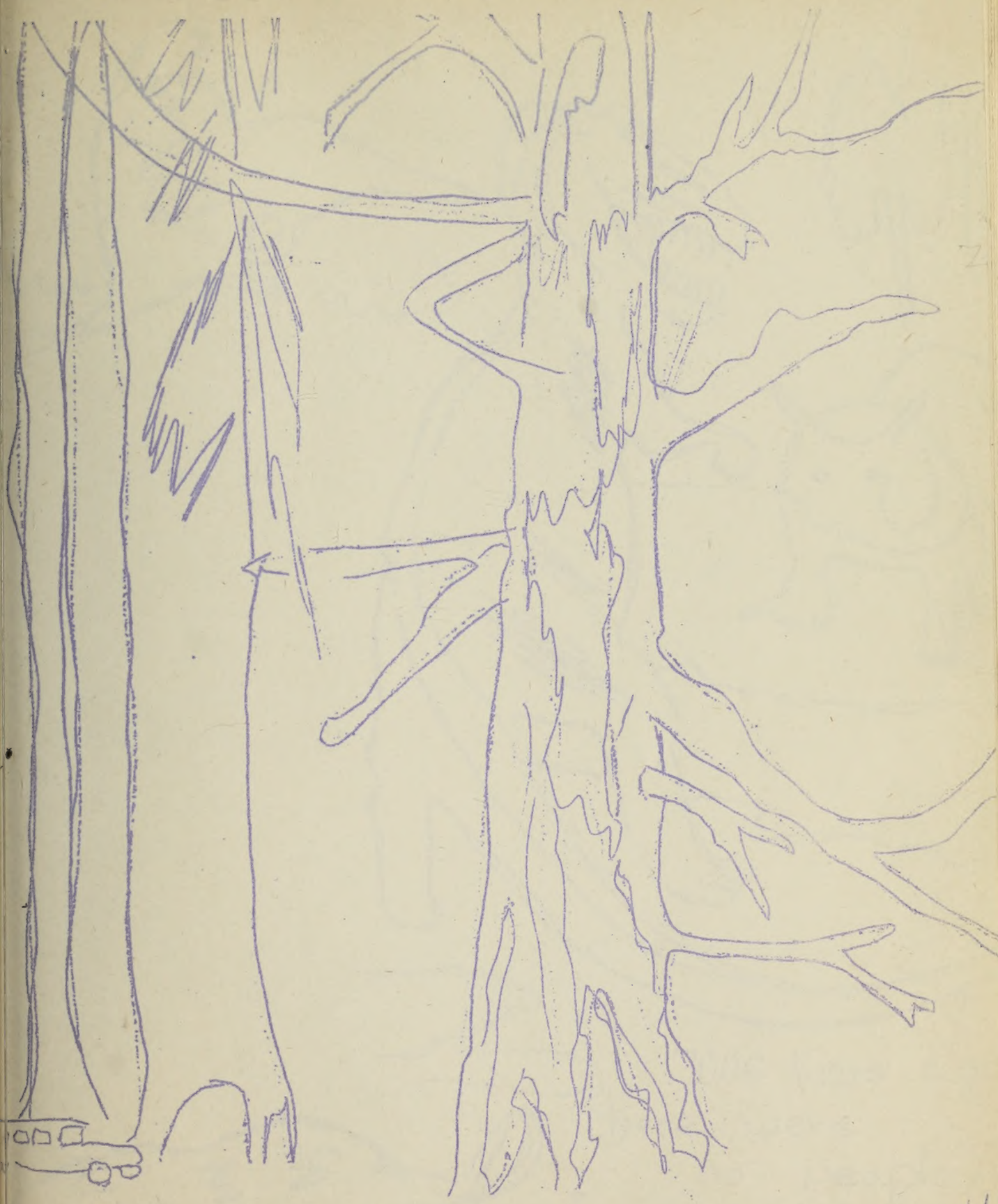
7 is more than 70 but not as much as 700. _____

7 is more than 70. _____

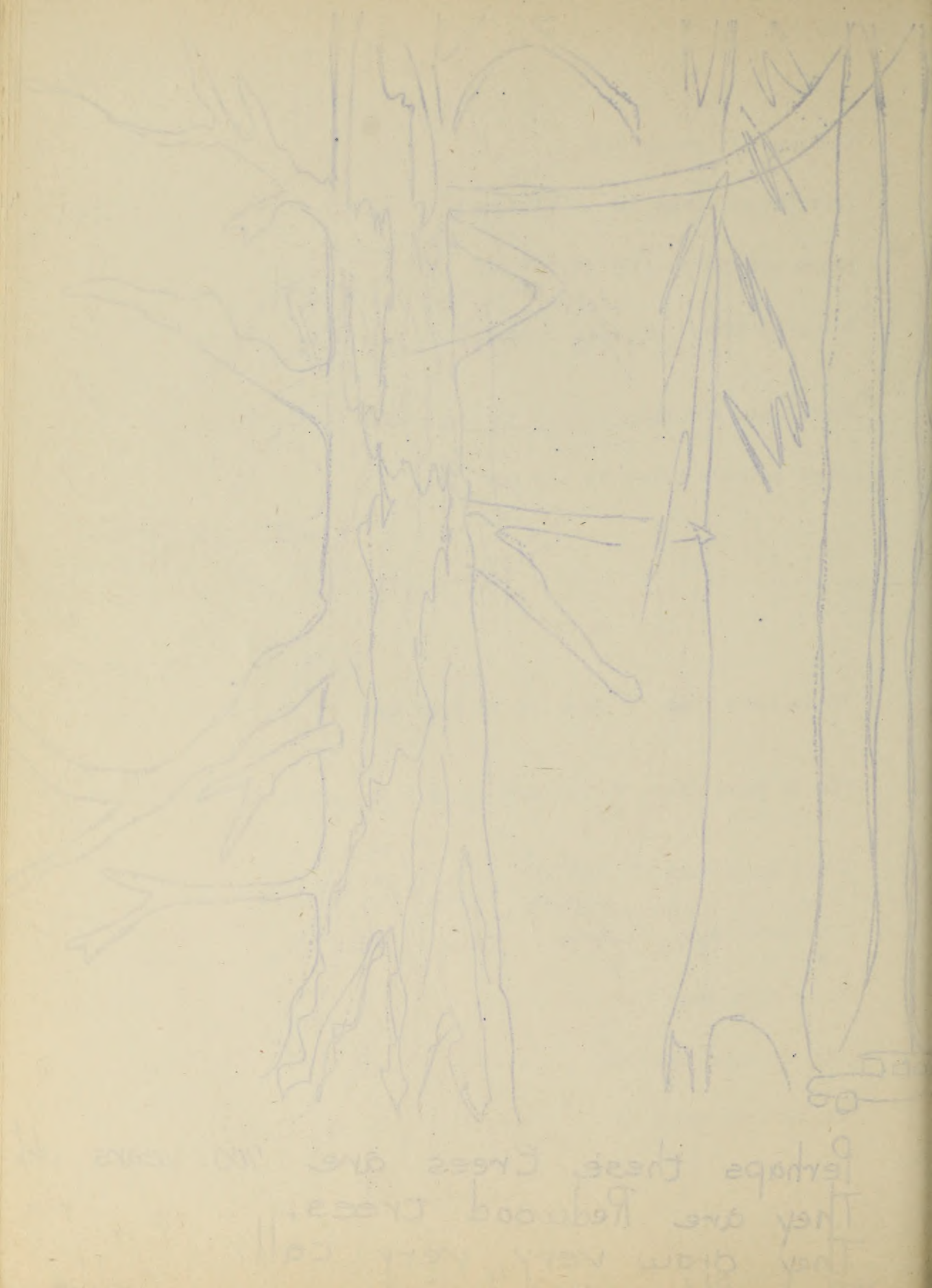
70 is more than 700 _____

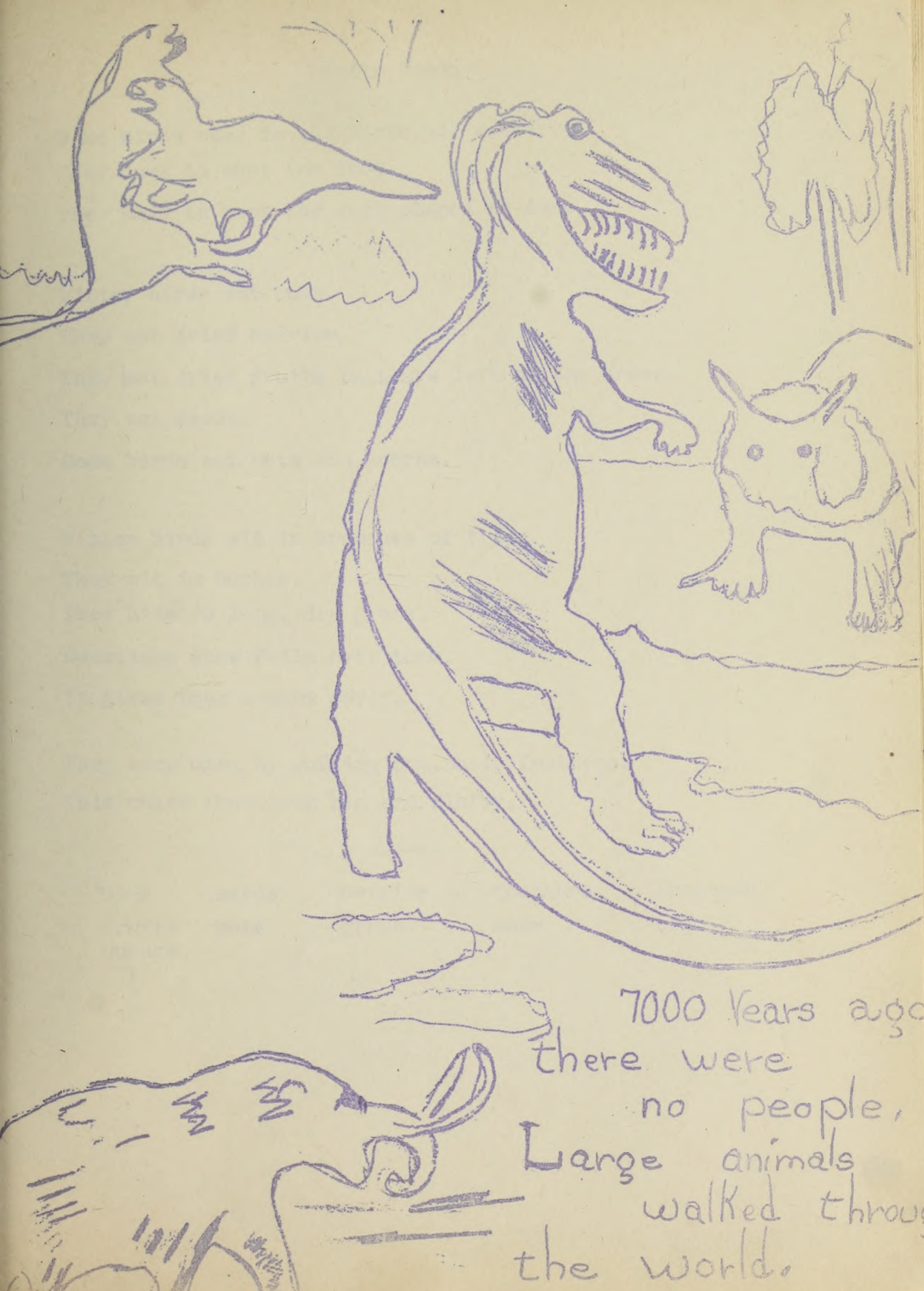
7000 is more than 700 _____

700 is more than 70 _____

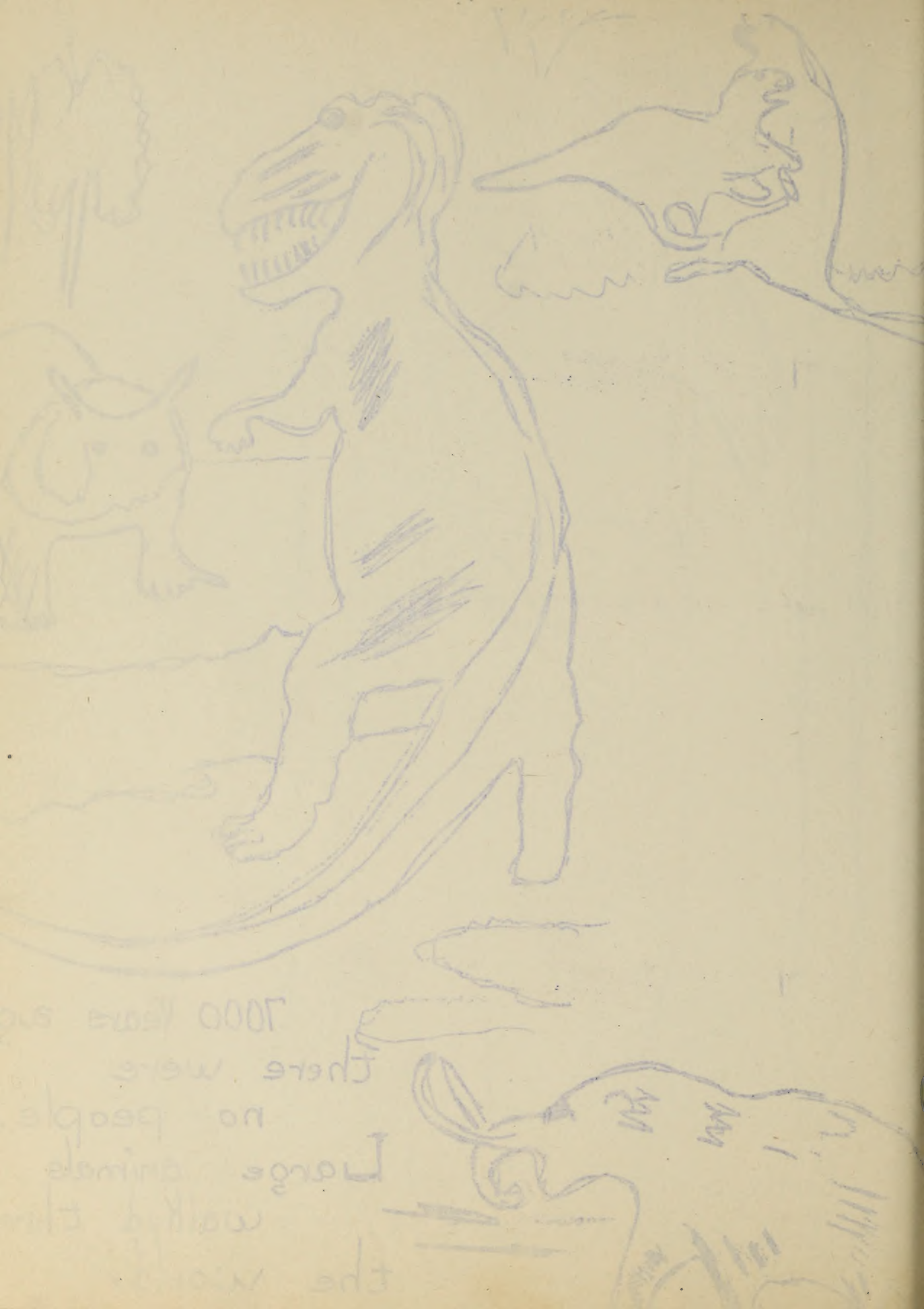


Perhaps these trees are 700 years old
They are Redwood trees.
They grow very, very tall.





7000 Years ago
there were
no people,
Large animals
walked throu
the world.



Winter Birds

Some birds stay in the North all winter.
They have to hunt for food.
They have to hunt for warm places to stay.

Winter birds eat buds.
They eat dried berries.
They eat dried fruits that are left on the trees.
They eat seeds.
Some birds eat nuts and acorns.

Winter birds sit in branches of trees.
They sit in bushes.
They hide in long, dry grass.
Sometimes snow falls over them.
It gives them a warm cover.

They keep warm by puffing out their feathers.
This makes them look big and fluffy.

---

buds	seeds	berries	feathers	branches
fruits	nuts	grass	snow	big
bushes				

Winter birds hide in dry _____.

_____ falls over them.

Winter birds eat _____.

They eat dried _____ and dried _____.

Winter birds sit in the _____ of trees.

They keep warm by puffing out their _____.

This makes them look _____.

Draw a winter tree with its buds.

Show a bird eating buds.

Draw a winter bush with dried berries.

Draw some birds eating dried berries.

Winter birds hide in my _____.

_____ fails over them.

Winter birds eat _____.

They eat dried _____ and dried _____.

Winter birds sit in the _____ or trees.

They keep warm by puffing out their _____.

This makes them look _____.

Drew a winter tree with its buds.

Show a bird eating buds.

Drew a winter bush with dried berries.

Drew some birds eating dried berries.

Some Winter Birds

The Blue Jay

The Blue Jay is beautiful.
His coat is bright blue.
He has a loud voice.
He lets the other birds know when there is any danger.
He carries things away and hides them.
He is sometimes called the clown of birds.

Everyone knows that the Blue Jay has a loud voice.
Some people do not know that he also has as sweet voice.
This voice is like a sweet bell.
He gives this sweet call in the Spring and Summer.

Sometimes the Blue Jay is a robber bird.
He robs the eggs of other birds.
But most of his food is acorns, chestnuts and insects.

Draw a picture of a Blue Jay.

Yes or No

The Blue Jay has a light gray coat. _____

He is sometimes called the clown of birds. _____

Sometimes he is called a robber bird. _____

The Blue Jay is beautiful. _____

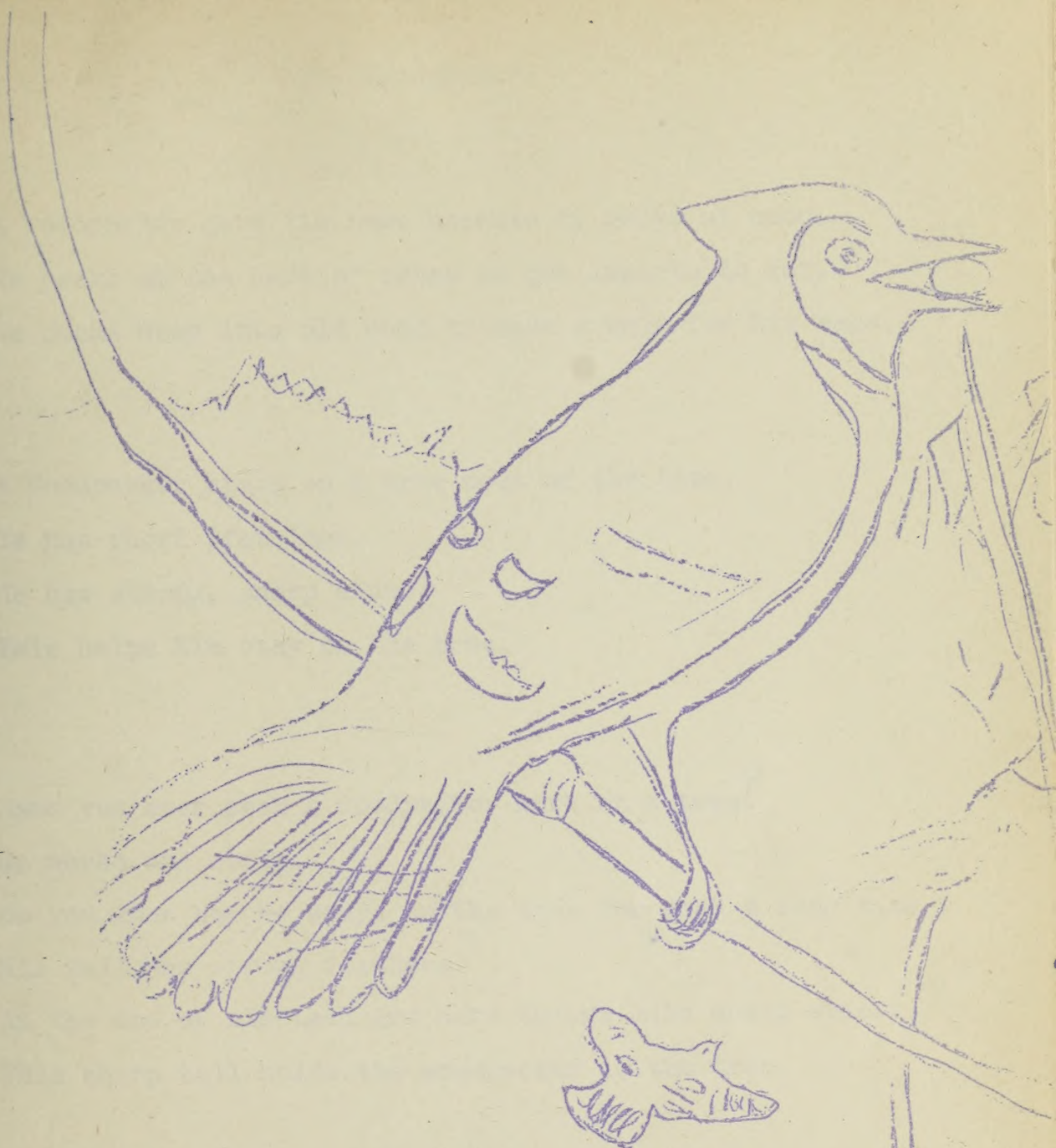
He has a soft voice. _____

Sometimes his voice is like a sweet bell. _____

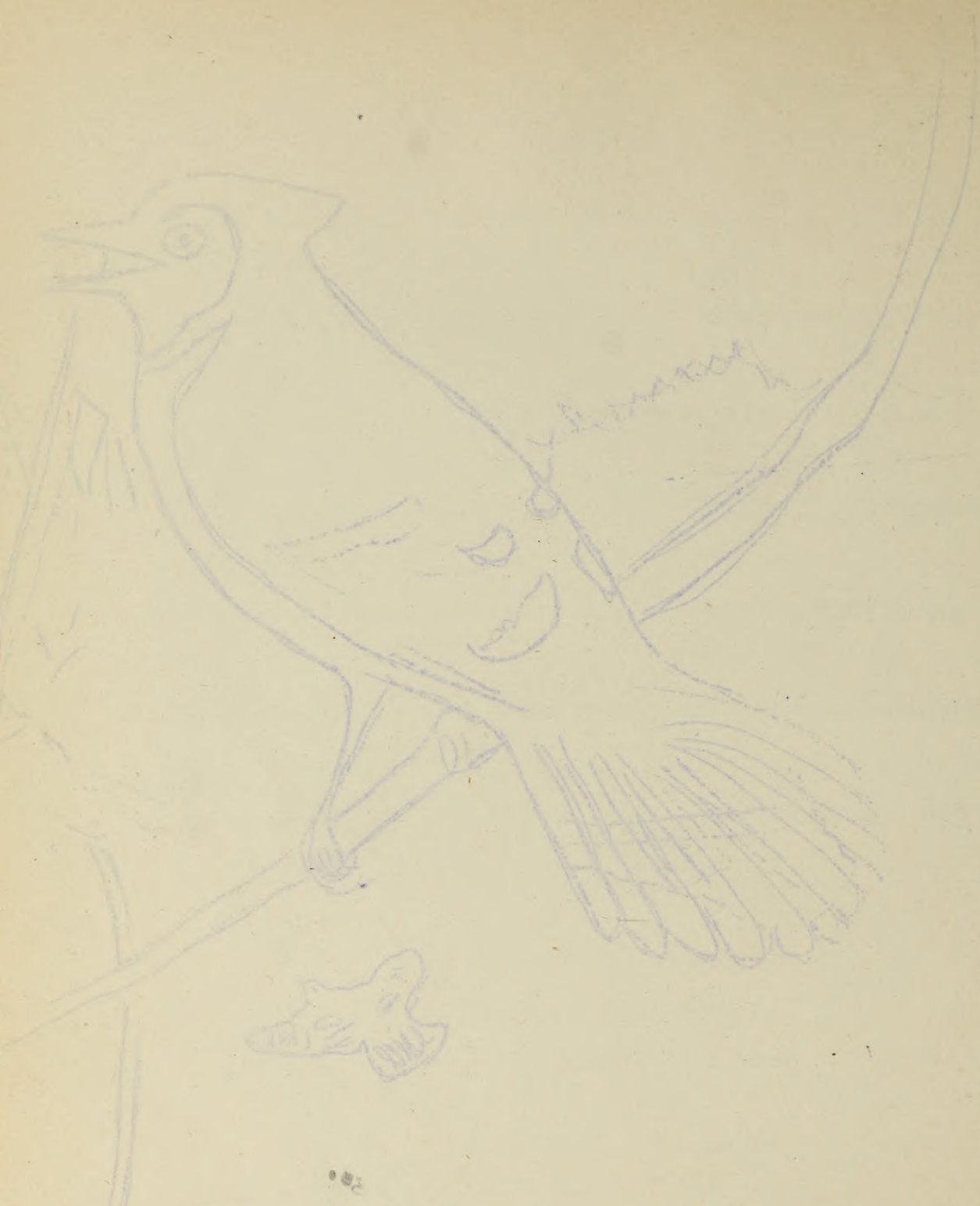
He has a loud voice. _____

Read these big words.
Find the little words inside the big words.
Draw a circle around the little words.

beautiful	sometimes	chestnuts	everyone
has	insects	away	robber
know	them	his	any



The Blue Jay is beautiful,
He is sometimes called
the clown of birds.



The Woodpecker

A Woodpecker gets its name because it pecks at wood.
He pecks at the bark of trees to get insects to eat.
He pecks deep into old wood to make a hole for his eggs.

A Woodpecker stays on a tree most of the time.
He has short ,fat legs.
He has strong, sharp claws.
This helps him stay on the tree.

Have you ever seen a Woodpecker work on a tree?
He works and works.
Do you know how he stays on the tree for such a long time ?
His tail has strong feathers.
At the end of his tail are hard things like sharp sticks.
This sharp tail holds the woodpecker to the tree.

The Woodpecker has a sharp, fat beak.
This is so that he can cut through wood.

He has a very long tongue.
It ends in a hard point.
It has small,sharp sticks along the sides.
With this long, sharp tongue he can catch bugs
deep in the bark of trees.

pecks · woodpecker

A Woodpecker pecks at wood.

Why does a Woodpecker peck at wood ?

Read these answers.
Two of these answers are right.
The other answers are not right.
Write the right answers on the lines.

A Woodpecker pecks at wood

1. Because he eats wood.
2. Because he eats insects under the bark.
3. Because he wants to keep warm.
4. Because he wants to hide.
5. Because he wants a hole for his eggs.

One answer is right.
Put a V beside the right answer.

A Woodpecker stays on a tree

1. All the time.
2. Not much of the time.
3. Most of the time.

His short legs and sharp claws help him

1.Run on the ground .

2. Fly in the air.

3.Stay on the tree.

What other part of the woodpecker helps him stay on the tree ?

Put a circle around the word that tells you.

head wings eyes

beak tail feathers

Which word tells what the woodpecker's tail is like ?

Put a circle around the word that tells you.

thin soft little strong

His beak is short sharp small.

This sharp beak helps him

1. Eat more.

2.Fly higher

3.Climb trees

4. Cut wood.

The woodpecker has a long, sharp tongue.

This helps him

1. Dig holes.

2. Stay on the tree.

3. Catch bugs deep in the tree.

Put these words in the right boxes.

I. word begins with s

I. word begins with sm

2 words begin with st

2 words begin with sh

3 words begin with str

Be careful.

Do not mix up st and str

These are the words.

Read them.

Put them in the right boxes.

stays short strong sticks

seem small sharp straight

string

s	sm	st
st	sh	sh
str	str	str

Downy Woodpecker

The Downy Woodpecker is small.

He is black and white.

He is friendly.

He has a bright, clear call.

small	friendly
black	white
bright	clear

The Downy Woodpecker is _____.

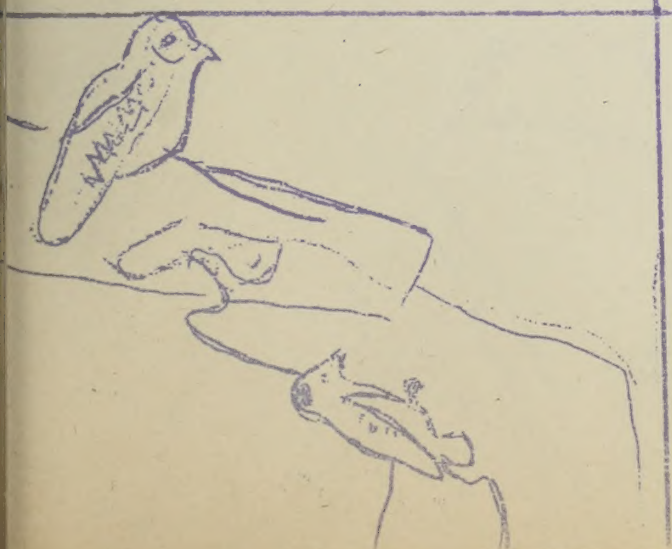
He is _____ and _____.

He is _____.

His call is _____ and _____.

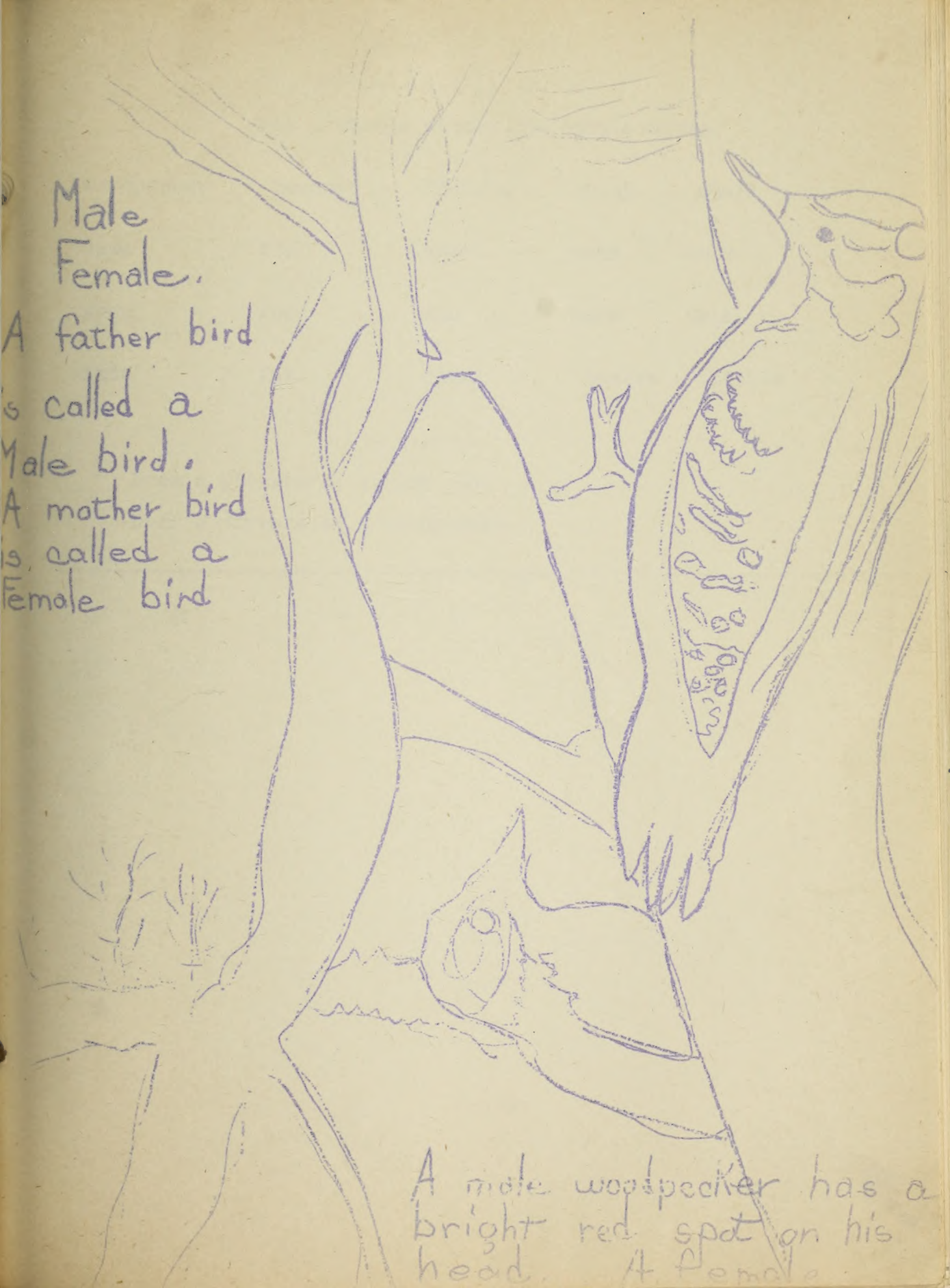
Here is a picture of Downy Woodpecker.

You draw his picture.

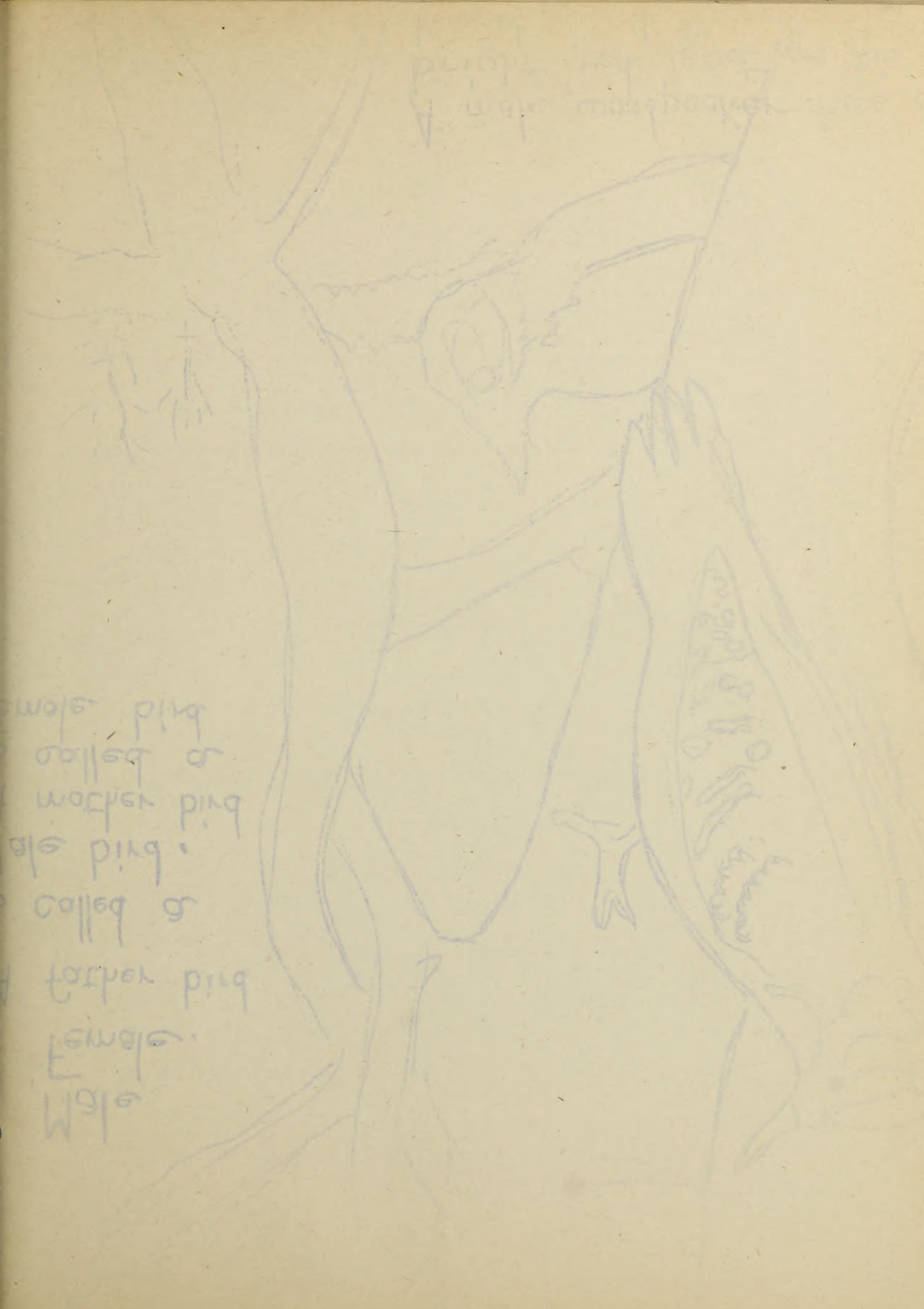


Male
Female.

A father bird
is called a
Male bird.
A mother bird
is called a
Female bird



A male woodpecker has a bright red spot on his head. A female



Here are some big words.

Inside are little words.

Put a circle around the little words.

woodpecker	because	insects	catch	small
name	his	short	beak	work
seen	for	has	know	this
into	fat	clear	inside	little

Draw a picture of a Blue Jay.

Draw a picture of a Woodpecker.

The Nuthatch

The Nuthatch is called an upside-down bird.
He can run up and down and all around on the trunk of a tree.
He can run up and down the side of a stone wall.
Sometimes he moves right side up.
Sometimes he moves upside down.

up
side upside down
down

right
side right side up
up

One of these words has the sound ow in the middle of itself.

Write that word here

One word ends in the sound ight .

Write that word here.

There are two words in the word upside

Write the small word here.
The small word has two letters.

Write the other word here.

The Muskrat is called an upside-down bird.

He can run up and down and all around on the trunk of a tree.

He can run up and down the side of a stone wall.

Sometimes he moves right side up.

Sometimes he moves upside down.

up

side

down

upside down

right

side

up

right side up

One of these words has the sound ow in the middle of their

Write that word here.

One word ends in the sound igh .

Write that word here.

There are two words in the word upside

Write the small word here.

The small word has two letters.

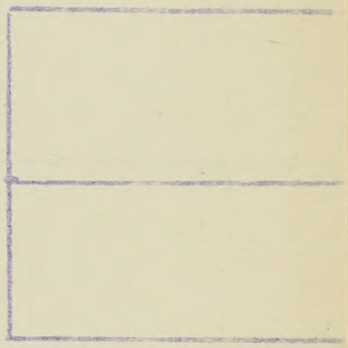
Write the other word here.

nuthatch

There are two small words inside this word.

Each small word has three letters

Write one in each box.



Do you know what the last two letters say ?

Write the sound in this box.

up down sometimes upside down

The nuthatch is called an _____ _____ bird.

The nuthatch runs _____ and _____ the tree trunk.

_____ it moves right side up.

1. Draw the trunk of a tree.

Show a nuthatch climbing upside down.

2. Draw the trunk of a tree.

Show a nuthatch climbing right side up.

The nuthatch is blue-gray and black.

The under parts are gray-white.

He has a short tail.

His bill is long and thin.

---

short	bill	part	under
long	thin	under	tail

One of these words has the little word in inside itself.

Find that word.

Write it in the box.

Another word has or inside itself.

Find that word.

Write it in the box.

Another word has ill inside itself.

Find that word.

Write it in the box.

The Nuthatch and the Woodpecker.

Because the nuthatch has a short tail he can climb any way over the trees.

Because the woodpecker has a long, strong tail he cannot climb so fast.

But the woodpecker's tail holds him in one place so that he can cut wood.

The woodpecker has a short, fat bill.
This helps him cut the wood.
The nuthatch has a long, thin bill.
He cannot cut wood like the woodpecker.
But his long, sharp bill can run into the little cracks in the tree.
Many insects live deep in the cracks.
The nuthatch can catch these insects.

Which is right ?

Put a V beside the one that is right.

A nuthatch has a short tail.

1. This helps him to fly.
2. Helps him to eat.
3. Helps him climb over the tree.

A woodpecker has a long, strong tail.

1. This helps him to climb.
2. Helps him cut deep into the wood.
3. Holds him to the tree so that he can cut wood.

The nuthatch has a long thin bill.

This bill helps him

I. To cut wood.

2. To catch insects in the air.

3. To catch insects in the cracks of trees.

The woodpecker has a short ,fat bill.

This bill helps him

I. To catch insects in the cracks of the tree.

2.To catch insects in the air.

3.To cut wood.

I.Draw a nuthatch.

2.Draw a woodpecker

Birds that are Helpers

The nuthatch is a helper to the tree.
He eats the insects that hurt the tree.
He can catch the insects hidden deep in the cracks of the tree.

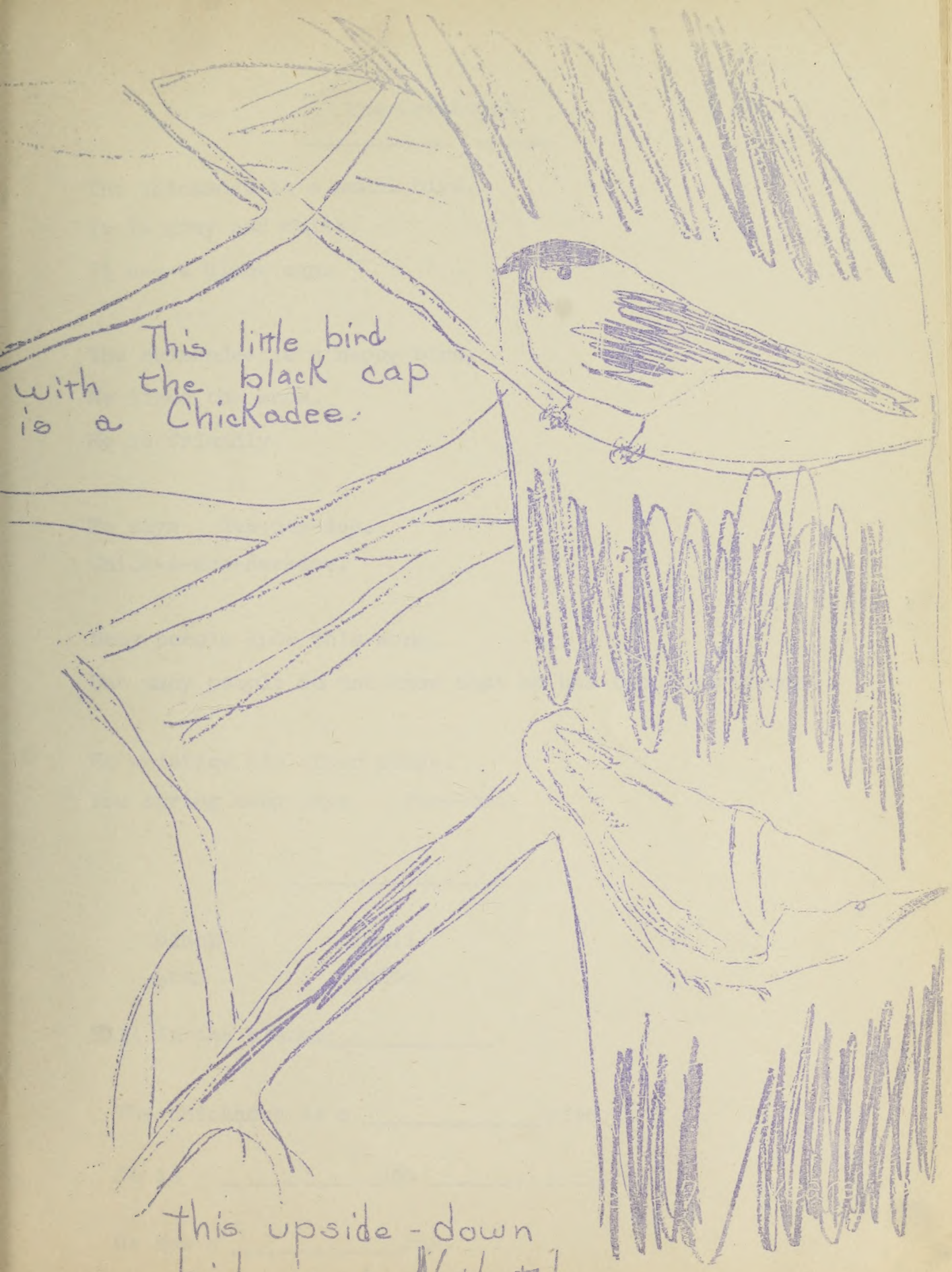
The woodpecker is a helper to the tree.
He cuts deep into the wood and eats the insects that hurt the tree.

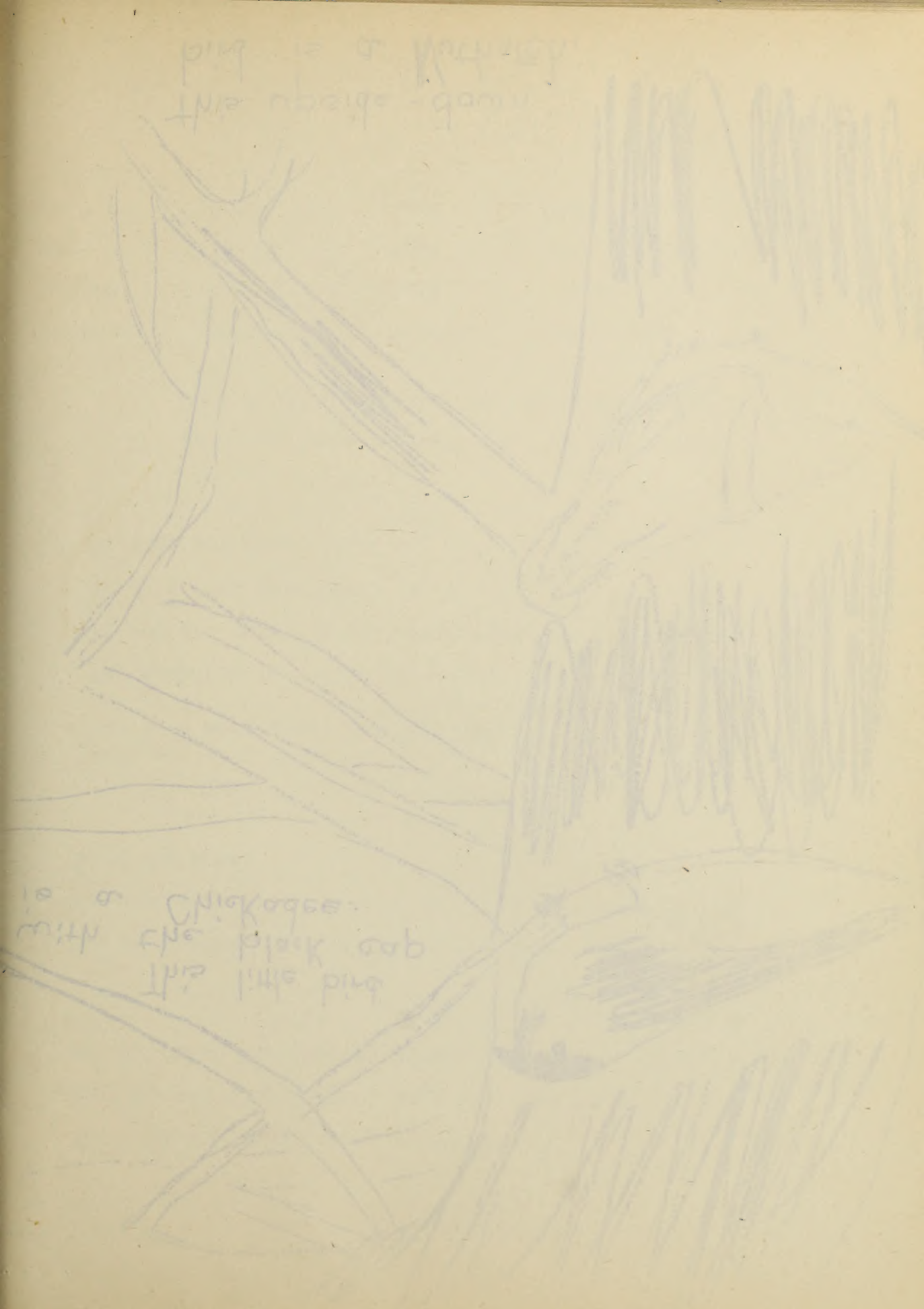
More about the Nuthatch

The nuthatch is a friendly bird.
If you are quiet he will stay near you.
He is a very busy bird.
He does not keep still.

Find the small words inside the big words.
Draw a circle around the small words.

nuthatch	sometimes	because	woodpecker	fat
called	short	hold	helper	has
wall	bill	fast	that	hit
can	into	near	his	still


This little bird with the black cap is a ChicKadee.
this upside-down bird is a Nuthatch.



The Chickadee

The chickadee is a small bird.
It is gray and white.
It has a black cap.

The chickadee is a happy bird.
He likes the snow.
He is friendly.

He says dee-dee-dee.
Chick-a-dee-dee-dee.

Many people know this song.
But many people do not know that he has two other songs.

He whistles his other songs.
The spring song says Phee-bee.

---

black	small
gray	white

Fill in the blanks_____.

The chickadee is a _____bird.

He is _____and _____.

He has a _____cap.

song	happy
many	chick-a-dee-dee-dee
Phe-bee	snow
whistle	friendly

Two of these words tell what the chickadee is like.
Find them.
Write the words in the boxes.

Find the chickadee's winter song.
Write the words in the box.

Find the chickadee's spring song.
Write the words in the box.

Helping the Birds

In the winter it is hard for the birds to find food.
You can help them.
Put out a bird feeding shelf in your yard.
Hang a piece of suet to a branch of a tree.

The chickadees and woodpeckers and nuthatches will like the suet.
The chickadees, blue jays and sparrows will like the bird seed.
You can buy bird seed at the store.
Other birds will like bread and cake crumbs.

Draw a picture of your yard.

Draw a bird feeding shelf.

Draw some suet hanging from a tree.

Draw some birds eating.

Draw a woodpecker, a nuthatch

a chickadee and a blue jay in your picture.

Put yourself in the picture.

You are bringing some food to the birds.

Names of Birds

Blue Jay	Woodpecker	Nuthatch
Sparrow	Robin	Chickadee

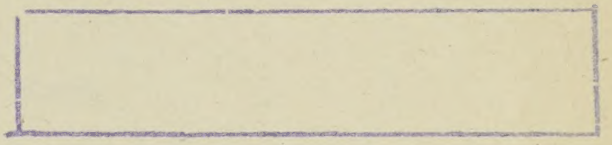
Guess the names of these birds.

Put the right name into each box.

This bird cuts deep into word. He cuts out insects that hurt the tree. He is a helper to the tree.

His name is _____

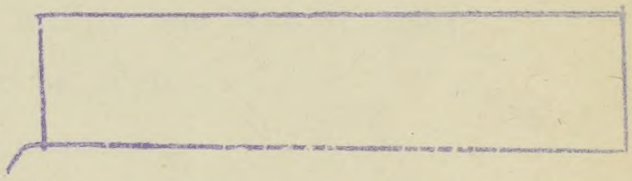
Put his name in this box.



This bird has a loud voice. He is very beautiful. He is sometimes called the clown of birds.

His name is _____

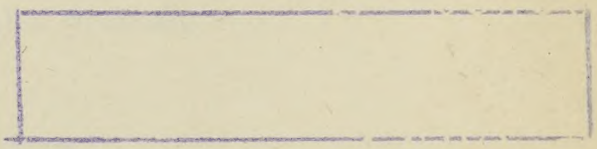
Put his name in this box.



This bird is small. He wears a black cap. He is friendly and likes snowy weather.

His name is _____

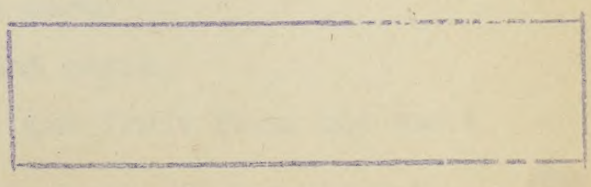
Put his name in this box.



This bird catches the insects in the cracks of trees. He is a helper to the tree. He is sometimes called the upside-down bird because of the way he climbs about on a tree.

His name is _____

Put his name in this box ____



A Story about Winter.

In winter the weather is cold.
The ground is hard and frozen.
Sometimes snow covers the ground.
There is ice on the water.
Trees are bare.
The winter months are January, February and the first part of March.

Waiting to be Born

Many things are asleep.
Plant seeds lie still in the ground.
They are waiting for the spring.
Many eggs lie in the ground and in the bark of trees.
These are insects waiting to be born.
Caterpillars sleep in their cocoons.
They are waiting to be born into moths and butterflies.

Many animals lie sleeping in the ground.
Some animals sleep all winter.
Some animals come out on good days.

Winter animals are looking for food and warm places to rest.
Winter birds are looking for food and warm places to rest.

In many places of the world it is warm.
Birds that fly south find food and nests.
Trains bring us fresh vegetables and fruit from the warm parts of the world.
In these places it is summer all year round.
In the North children play in the snow.

Draw a winter picture.

The children are walking through a field.

Some of them are going to slide on the hill.

Some of them are going to skate on the pond.

Some of the winter animals are watching them.

Some of the winter birds are looking for food.

People Get Ready for Winter

Warm Clothes

In winter the weather is cold.

We need warm clothes.

Warm clothes are made of wool.

Our bodies are warm.

Woolen clothes hold the heat of our bodies.

Body heat stays inside our woolen clothes.

So we keep warm in cold weather.

Draw your picture dressed in your warmest clothes.

Draw two of your friends dressed in their warmest clothes.

Draw two things in the picture to show it is winter.

Draw two trees in the picture.

How should they look ?

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How should they look ?

Learn these words

warm wool

cold heat

Find the right word

Warm clothes are made of _____.

Woolen clothes hold the _____.

In winter we need _____clothes.

Weather is _____in the winter.

Read these big words.

Find the small words inside the big words.

Draw a circle around the small words.

cold heat woolen

winter hold inside

People in the Far North

Some people live in the North.

These people are called Eskimos.

The weather is cold.

There is snow and ice.

Warm Clothes for Eskimos

Eskimos wear fur clothes.

They wear fur coats.

They wear fur hats.

They wear fur shoes.

Fur is warmer than wool.

Fur keeps the body heat inside.

Read these words

North ice fur

snow clothes Eskimos

Find the right words.

People in the North are called _____.

Eskimos wear _____ _____.

There is _____ and _____ on the ground.

Some people live in the _____.

Eskimo Babies

Eskimo babies are dressed in fur.

Their underwear is made of birds' skins.

Soft feathers hold in the heat.

Eskimo babies in clothes of fur and feathers do not feel the cold.

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Draw an Eskimo Family.

Draw the father, the mother and the baby.

An Eskimo house is called an Igloo

Draw an Igloo.

Read these words.

Find the right words.

fur heat

skins feathers

Eskimo babies are dressed in _____.

Their underwear is made of birds' _____.

Soft _____ hold in the _____.

Draw an Eskimo boy.

Draw his fur coat.

Draw his fur hat.

Draw his fur shoes.

Read these words.

Find the right words.

fur heat

skins feathers

Baking babies are dressed in _____.

Their underwear is made of birds' _____.

Soft _____ hold in the _____.

_____

Drew an Eskimo boy.

Drew his fur coat.

Drew his fur hat.

Drew his fur shoes.

Summer all the Year

In summer we wear cool clothes.

Our clothes are made of cotton.

Cotton does not hold the heat of our bodies.

Cotton clothes let body heat get away.

We feel well when we are cool.

Some parts of the world have summer all the year.

What kind of clothes do these children wear ?

Draw their picture.

Draw two things in the picture that will show the weather is warm.

Draw two trees in the picture.

How should they look ?

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We feel well when we are cool.

Some parts of the world have summer all the year.

What kind of clothes do these children wear ?

Draw their picture.

Draw two things in the picture that will show the weather is warm.

Draw two trees in the picture.

How should they look ?

Warm Houses

In the winter we must have warm houses.

We make a fire in the stove.

We make a fire in the furnace.

Sometimes we burn coal.

Sometimes we burn wood.

Sometimes we burn oil.

Sometimes we burn gas.

Read these words.
Find the right words.

fire	stove
burn	furnace

To Keep Warm

To keep a house warm we must make a _____.

We make a fire in the _____.

We make a fire in the _____.

Sometimes we _____ coal.

Here are some words.
In each square three words belong together.
One word does not belong in the square.
Draw a line under the word that does not belong.

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north south people east	snow house ice rain	coats hats shoes tables	
cotton baby fur wool	heat cold Igloo warm	house coal wood oil	

Food for Winter

Food helps to keep us warm.

Food makes body heat.

In the fall mother canned vegetables and fruit.

This is the way she saved good food for winter.

Mother canned vegetables.

Mother canned fruit.

Mother made jelly.

north	snow	coats
south	bears	hats
people	ice	shoes
east	rain	tables
cotton	heat	house
baby	coal	coat
fur	lights	wood
wool	warm	oil

Here is a picture of Mother canning fruit.

Put an X on Mother.

Color her dress blue.

Nancy and Jimmy are watching her.

Nancy is helping Mother.

Put an O on Nancy.

Color her dress red.

Color her apron green.

Put a V on Jimmy

Color his shirt yellow.

Put a ☐ on the stove.

Mother is taking out some fruit.

Put a V on the spoon.

Find the jar of fruit.

Put an X on it.

Harvest Time

In the fall the farmers are very busy.

They bring in food from the garden.

We call this the Harvest Time.

The farmer brings in potatoes from the potato field.

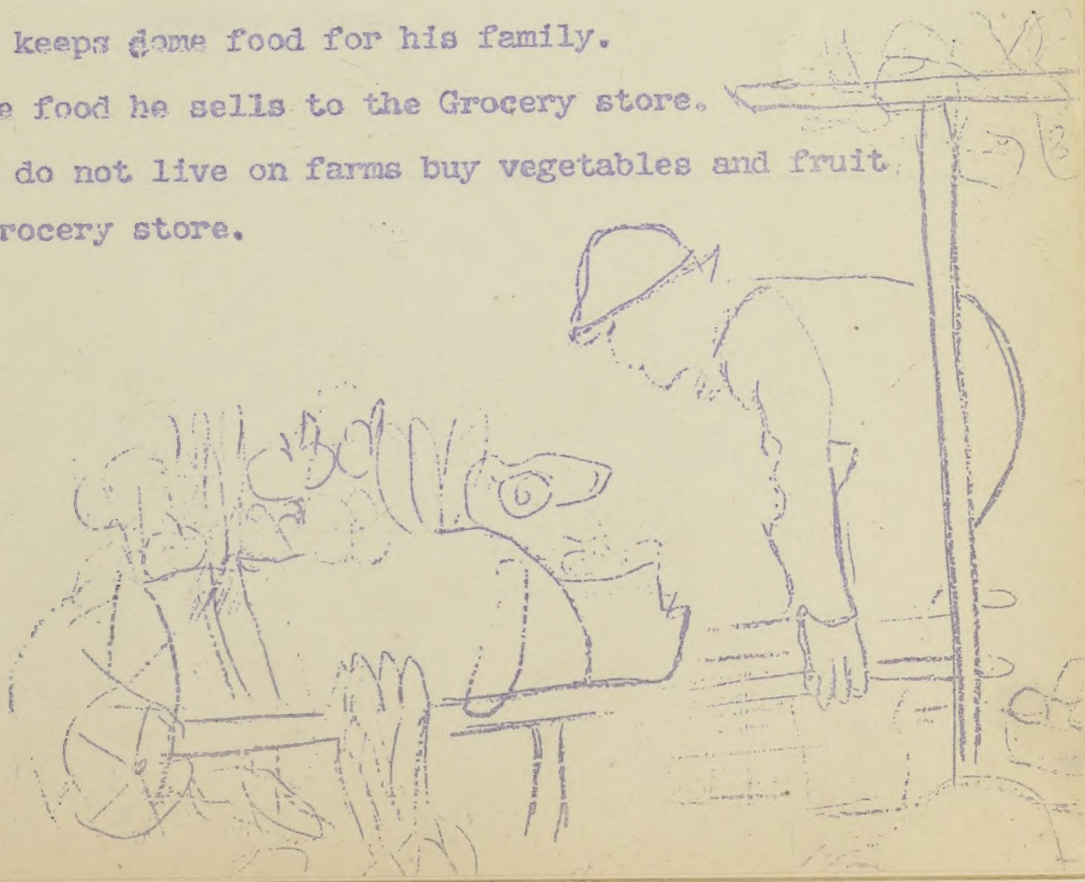
He brings in turnips, onions and cabbages.

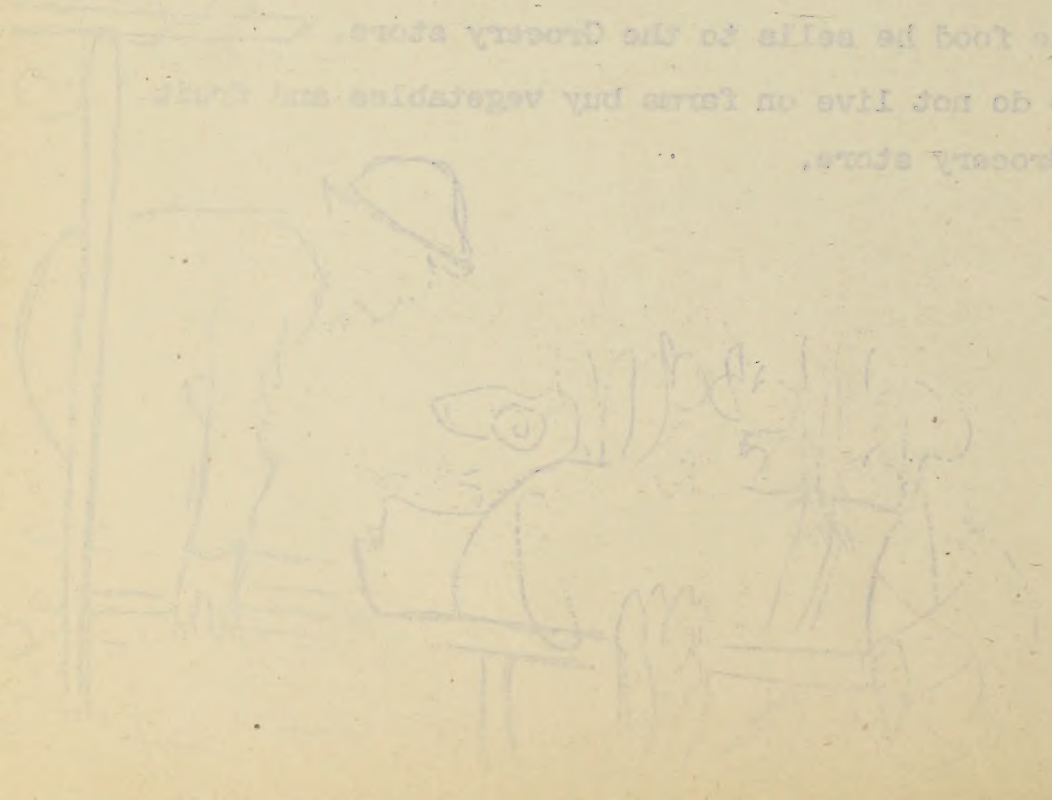
He picks apples and pears and grapes.

The farmer keeps some food for his family.

Most of the food he sells to the Grocery store.

People who do not live on farms buy vegetables and fruit from the Grocery store.





Draw a picture of the farmer.

I. Show the farmer bringing in potatoes from the potato field.

2. Show the farmer picking apples.

3. The farmer puts many fruits and vegetables into his truck.
He drives his truck to town.
He sells his fruits and vegetables to the Grocery store.

Draw a picture of the Farmer's truck full of vegetables and fruit.

4. Draw a picture of you and your mother buying fruits and vegetables at the Grocery store.

Draw the pictures here

Fresh Vegetables All the Year

Stores have fresh vegetables and fruit in the summer.
The Farmers bring the vegetables from the gardens.

Stores have fresh vegetables in the winter.
But the weather is cold.
The gardens are covered with snow and ice.

Do you know how stores can have fresh vegetables in the winter ?
Try to guess.
Read this story and see if you are right.

Fresh Vegetables in Winter

Some parts of the world are warm all the year.
In the warm South gardens are growing all the year.
Fast trains bring the vegetables from the gardens of the South to the cold cities of the North.
These trains have cold cars.
The cold cars are called Refrigerator cars.
These cold cars keep the vegetables fresh.

----- Draw a train. Show the cold ca

How city people get food.

People in the city and town get food from the store.

Sometimes they get canned vegetables.

Sometimes they get canned fruit.

Sometimes they get canned meat.

Sometimes they get canned fish.

In the boxes are fresh vegetables and fruit.

Sometimes they get fresh vegetables.

Sometimes they get fresh fruit.

People in the country get food from the farms.

They get it from their gardens.

They pick fresh vegetables.

They pick fresh fruit.

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They get it from their gardens.

They pick fresh vegetables.

They pick fresh fruit.

Some of these sentences are true.

Some are not true.

Can you tell which is which ?

Put a C beside the ones that are true.

Put a X beside the ones that are not true

Stores do not have fresh vegetables.

Gardens grow in the warm South all the year.

In the winter the weather is cold in all parts of the world.

Some parts of the world are warm all the year.

In the North the winter is warm.

In the South the winter is warm.

Gardens grow in the North all year.

Stores have fresh vegetables all year.

Fast trains bring vegetables from the south.

Refrigerator cars are cold cars.

Cold cars keep vegetables fresh.

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Fast trains bring vegetables from the south.

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Cold cars keep vegetables fresh.

Here are some big words.

There are little words in the big words.

Find the little words.

Put a circle around them.

heat	winter	this	train
fall	can	potato	turnips
canned	farmer	onion	bring
fruit	busy	family	vegetable
for	call	farm	city

Putting Words together.

1. Find all the words that say the name of a vegetable.
   Put those words together.
2. Find all the words that say the name of a fruit.
   Put those words together.
3. Find all the words that tell how we heat our house.
   Put those words together.
4. Find all the names of clothes that you can.
   Put those words together.

Vegetables	Fruits	Heat	Clothes	

Find the little words.

Put a circle around them.

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Vegetables	Fruits	Heat	Clothes

A Story about March

In March the weather is windy.

Children like to fly kites.

The ground is muddy.

Bob lives near the woods.

One day he found some pussy willows.

He brought them to school.

Nancy saw an early spring robin.

It said: "Cheer up! Cheer up! "

Draw the picture of this story.

How can you show that the weather is windy ?

Wake Up

In spring things begin to wake up.
Animals come out of their winter homes.
They are very thin.
They begin to look for food.
Soon baby animals will be born.

Every day birds come back from the South.
They begin to build nests.
Soon baby birds will be born.

Closed leaf buds on the trees and bushes being to open.
New spring leaves and flowers will come out.

Plants begin to grow.
The farmer plows the ground.
Then he plants his seeds.
Spring time is planting time.

A Spring Garden

The farmer plows the ground.
This makes it smooth and fine for growing things.
The farmer plants many kinds of seeds.
Draw a picture of the farmer planting his garden.
Some men are helping him.
One man is driving a tractor.
Another is raking over the ground.
Some men are planting the seeds.
Show the farmer and his men at work in the garden

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The Surprise

One day the children remembered to look at the Chrysalis.

The Chrysalis was cracking open.

Out came a big insect.

It looked dark and wet.

Slowly it turned around.

It began to spread its wings.

They were brown.

As it dried it spread its wings out.

The children saw that it was beautiful.

The teacher told them that this insect was a Monarch butterfly.

I. Draw a branch . Show the chrysalis hanging from the branch.

2. Draw what came out of the chrysalis.

Some of these words are names of plants.

Some of these words are names of animals.

Some of these words are names of birds.

Try to write the names where they belong.

woodchuck	chipmunk	chickadee	turnip
blue jay	woodpecker	carrot	skunk
lettuce	potato	nuthatch	onion
squirrel	celery	radish	toad

Animals

Birds

Plants

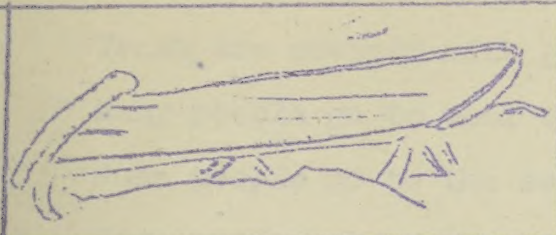
Draw a picture here

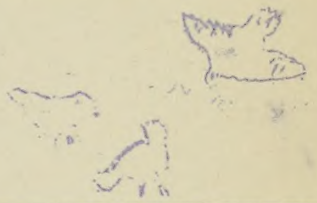
Some of these pictures belong to stories about spring.

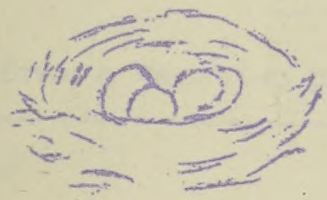
Some of these pictures do not belong to spring.

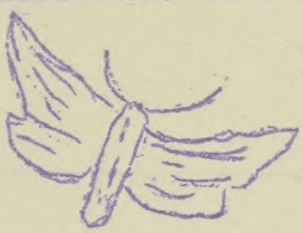
Write the word SPRING under each spring picture.

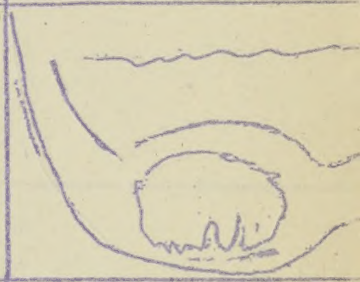
Put an X under each picture that is not a spring picture.

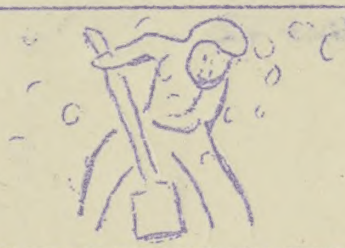


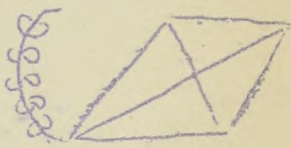


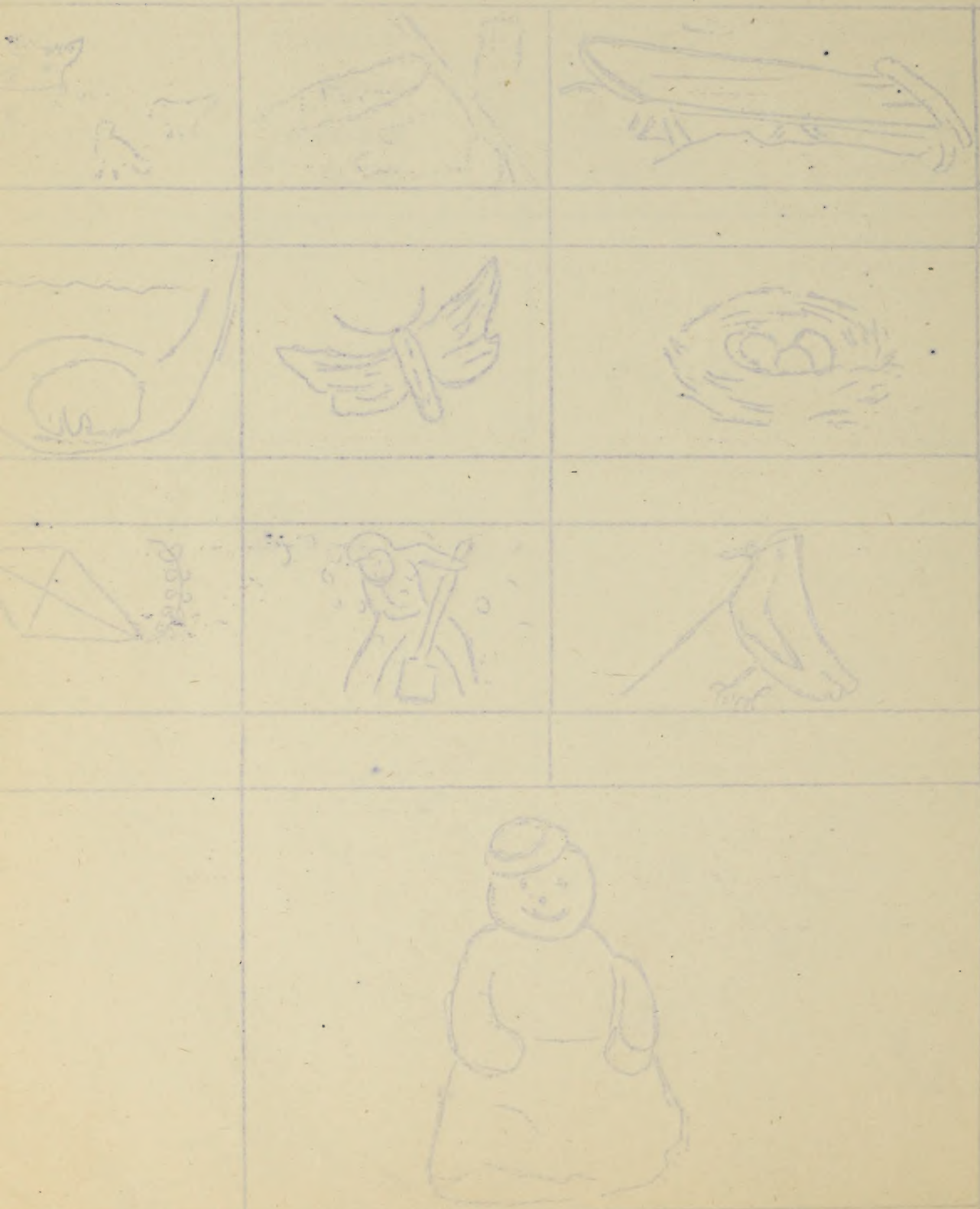












A Story about Summer

Now the weather is warm.

Some days are very hot.

There are many flowers in the garden.

Trees are covered with green leaves.

Many people go to cool vacation places.

Some people go to the seashore.

Some people go to the mountains.

Some people go to the country.

Draw a vacation picture.

The Months

Do you remember the names of the autumn months ?

Do you remember the names of the winter months ?

The Spring months are ***---

the last part of March, April, May and the first part of June.

The Summer months are ---------

the last part of June, July and August.

There are four seasons in the year-----

Winter Spring Summer Autumn

Draw a line under the right word.

I. What name is an Autumn month ?

January October May

2. Which name is a winter month ?

October April February

3. Which name is a summer month ?

November July April

4. Which name is a spring month ?

December August July

Spring Summer Winter Autumn

Write the name that has the month in it.

October ---an_____month!

January ---a_____month.

April ----a_____month.

Julu ---a_____month

Do you remember the names of the autumn months ?

Do you remember the names of the winter months ?

The Spring months are ---

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2. Which name is a winter month ?

October April February

3. Which name is a summer month ?

November July April

4. Which name is a spring month ?

December August July

Write the name that has the month in it.

October ---an_____month!

January ---s_____month.

April ---s_____month.

July ---s_____month

Draw a picture of each of these months

October

January

April

July

Draw trees in each picture.
Think how they will look.
Draw you and your friends.
Be sure you have the right clothes for each picture.
Be doing something in each picture

OCTOBER PICTURE

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